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Symmetry and Proportion: How These Issues Guide, Inform and Add Coherence to Musical Composition

by

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**Thesis submitted
for the Degree of Doctor of Philosophy**

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Abstract

The central subject of this thesis is the application of the concepts of symmetry and proportion in music and how these can be used to generate original compositions.

Information about the musical application regarding concepts of symmetry and proportion both in the twentieth-century and earlier is provided. The first section also offers additional information about the construction of symmetrical harmony and its common usage; here too, principles of intervallic proportion are explained based on the compositional thinking of English composer Christopher Bochmann.

The second section presents seven original compositions, each supported by their own commentary. Each work features a variety of instrumental forces ranging from solo to orchestral. Lending a separate emphasis (in analysis) to each composition helps to provide a broad picture of the potential that the ideas of symmetry and proportion bring to contemporary composition.

Acknowledgments

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Introduction

Introduction

From the earliest practices to the present day, it is possible to recognise symmetrical structures in the work of various composers; in the twentieth century the concern with symmetry and proportion is of particular relevance. Such structural concerns have, of course, preoccupied composers throughout history and, whether or not principles of symmetry and proportion have been applied consciously, there is an inherent predisposition in most scores towards balance. Laws of musical construction have been developed theoretically over the course of history. In the majority of musical works it is possible to understand the individual and stylistic marks of their creator. Due to the fact that music is a temporal art based on time and meter, it possesses a high level of symmetry and regularity. A 'symmetry' analysis of a musical piece can provide information about the various levels of symmetry which occur in different parameters: counterpoint, rhythmical repetitiveness, symmetrical harmony and symmetrical form.

In European culture, the idea behind the concept of symmetry has its roots in Greek philosophy, primarily used as an interpretation of commensurability, balance, proportion and regularity¹. The geometrical and mathematical meaning of the term as it is used today in sciences and music theory started being used in the late eighteenth and early nineteenth centuries. In art and scientific disciplines the theory of symmetry can have an important role in mathematics, physics, crystallography, chemistry, biology, aesthetics, visual arts, theory of proportion, architecture, etc.²; and applied in a wide range of phenomena of both physical objects (planetary systems, geometric figures, elementary particles) and abstract systems (mathematical relations, laws of physics, a segment of music)³.

The physicist Richard Feynman and the mathematician Hermann Weyl noted the following in relation to symmetry:

- 1) "Symmetry seems to be absolutely fascinating to the human mind. We like to look at symmetrical things in nature, such as perfectly symmetrical spheres like

¹ Hofman-Jablan, J., 2007. *Symmetry of Musical Work* [e-book]
Available at: <<http://www.mi.sanu.ac.rs/vismath/jadrbookhtml/index.html>>
[Accessed 2 February 2011].

² *Ibid.*

³ Morgan, R.P., 1998. Symmetrical Form and Common-Practice Tonality. *Music Theory Spectrum*, 20(1), p.5.

planets and the sun, or symmetrical crystals like snowflakes, or flowers which are nearly symmetrical.”⁴

- 2) “Symmetry, as wide or as narrow as you may define its meaning, is one idea by which man through the ages has tried to comprehend and create order, beauty, and perfection.”⁵

Due to the fact that music is a temporal art based upon repetition, contrast, balance, *etc.*, the analytical musical research practised by theorists is then not surprising. If on one hand characteristics of symmetrical correspondence are easily recognisable in visual arts (specifically non-temporal arts) such as painting, in music the perception of symmetry within a time-frame becomes more difficult and demands an *a priori* recognition of the symmetrical systems at work.

The specialist focus of this thesis is placed on the use of principles of symmetry and proportion in the various parameters of the musical language. Analysis will be provided evincing the common use of these principles in music before the twentieth century as well as in music of twentieth and twenty-first centuries. Additional information about English composer Christopher Bochmann’s compositional thinking related to intervallic proportion will be given. The inclusion of an analysis of Bochmann’s work *Lament* is considered to be of special importance as it facilitates the understanding of the application of symmetrical harmony. I will actively seek to demonstrate many theoretical principles relating to composition through the use of real musical examples in preference (due to context) to complex geometrical formulae.

⁴ Feynman, R., 1967. *The Character of Physical Law*. Cambridge, MA: MIT Press, p.84.

⁵ Weyl, H., 1952. *Symmetry*. Princeton: Princeton University Press, p.5.

Symmetry and Proportion in Music

Section 1

This section examines the use of the principles of symmetry and proportion in their various musical parameters. Their application and the ways in which composers have used these ideas in practice will be analysed in 1) music before the twentieth century and 2) music of the twentieth and twenty-first centuries. Additional information and research will be given relating to 3) Christopher Bochmann's compositional thinking based on intervallic proportion and 4) construction and usage of symmetrical harmony.

1. Symmetry and Proportion in Music before the Twentieth Century

Throughout the history of western classical music one can recognise universal governing theories, symmetry being just one of these. The recognition of correspondences is vital to the way we organise experience: the human need for order tends to favour symmetrical patterns. Symmetry allows us to comprehend events as a synthesis of matching components and invites us to see wholes as the necessary outcome of a joining of complementary parts⁶. Departing from the definition “symmetry = harmony of proportions”⁷, it is possible to find multifarious examples where composers purposely searched for balance in their compositions. Due to the fact that symmetry necessitates at some level the idea of repetition, one can satisfactorily conclude that by using symmetrical principles in composition, the composers imbue their material with a commendable sense of economy. Music’s formal structure may be defined as a specific articulation of time. Two of the most fundamental and important compositional principles are repetition and variation, each allowing for unity within the musical form. There are various ways and recognisable examples of the application of symmetrical/proportional principles in musical structure and form, as well as its realisation concerning different styles and systems. In music, symmetry can be initially recognised in ‘rainbow shape’ melodies found in medieval Gregorian chant, as well as in the polyphonic settings of the *ordinarium messae*, where a symmetrical formal disposition of the text would be translated to music⁸. For example: *Kyrie eleison, Christie eleison, Kyrie eleison*.

There are numerous musical examples of symmetrical concepts applied to counterpoint, the ‘crab canon’ being a prime example. The composition of such a canon consists of two complementary voices, one part moving backward while the other moves forward⁹. An example of this compositional conceit can be found in the first canon in J.S. Bach’s *A Musical Offering* as shown in Figure 1.1.

⁶ Morgan, R.P., 1998. Symmetrical Form and Common-Practice Tonality. *Music Theory Spectrum*, 20(1), p.1.

⁷ Weyl, H., 1952. *Symmetry*. Princeton: Princeton University Press, p.i.

⁸ Kempf, D., 1996. What is Symmetry in Music?. *International Review of the Aesthetics and Sociology of Music*, 27(2), p.156.

⁹ David, H.T., 1945. *J.S.Bach’s Musical Offering: History, Interpretation, and Analysis*. New York: Dover Publications, Inc, p.21.

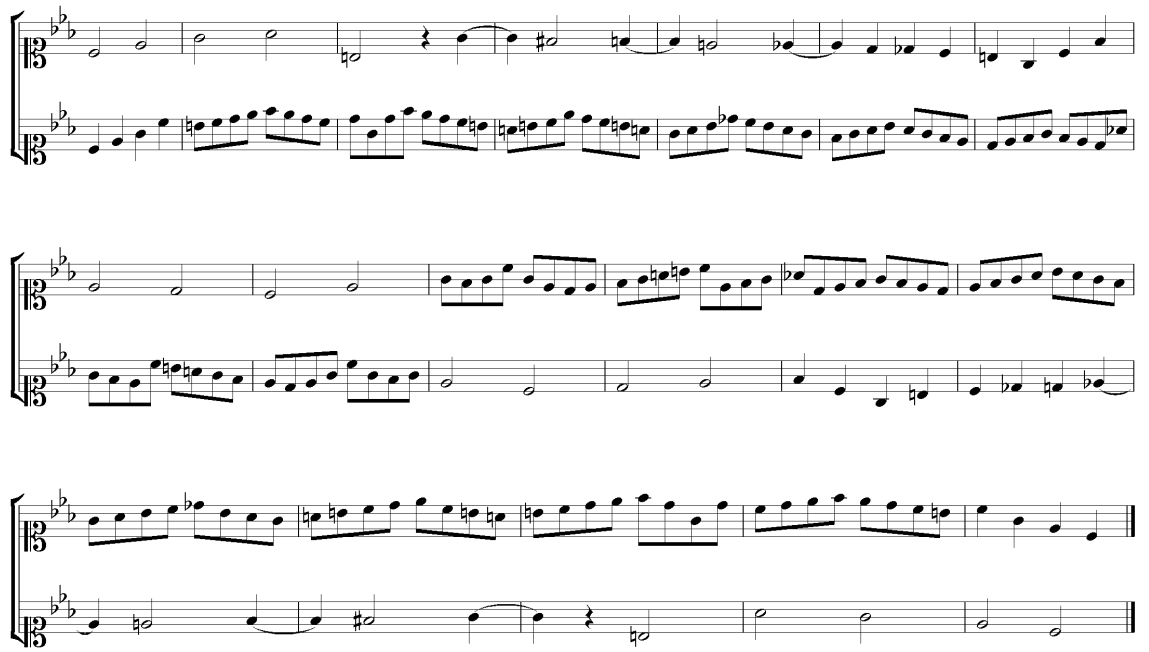


Figure 1.1

J.S. Bach, *A Musical Offering* (Canon a 2)

In a different way, the process of inversion can be applied to the whole polyphonic form of the fugue. In *Contrapunctus 12, a 4 rectus et inversus* from Bach's *The Art of Fugue*, the complete polyphonic structure of the original fugue was firstly reflected around an imaginary horizontal axis and then translated in time (Figure 1.2): the original version of the fugue is followed by its inverted version.



Figure 1.2
J.S. Bach, *The Art of Fugue*
Contrapunctus 12, a 4. (rectus et) inversus (bars 14 – 18)

Another interesting example of symmetry applied to polyphonic music can be seen in Guillaume de Machaut's Rondeau *Ma fin est mon commencement* from Ars Nova. After an imaginary vertical axis of symmetry in the middle, the whole second part is a literal retrograde repetition of the first one; only the tenor voices interchange their positions. Another vertical axis could be put at the end allowing the composition to be performed backwards¹⁰. A similar example from classical homophonic music can be found in the third movement of Haydn's *Piano Sonata in A Major*, Hob.XVI:26. The first part of this *Menuetto al Rovescio* (Figure 1.3) is a Tonic-Dominant Dominant-Tonic period with two phrases of equal duration. The first 10-bar phrase (antecedent) is repeated retrogradely in order to create the consequent. A similar procedure is applied to the trio, resulting in an interrelation of symmetries¹¹.

¹⁰ Kempf, Op. cit., p. 159.

¹¹ Morgan, Op. cit., p. 26.



Figure 1.3

J. Haydn, *Piano Sonata in A Major*, Hob.XVI:26/iii (bars 1 – 20)

With regards to the formal symmetry, it is also possible to find multifarious examples. The most recognisable symmetrical pattern is A – B – A. This can be found in arias (starting with the *da capo* arias from the Baroque era); in three-part song forms of classical instrumental music; in piano-miniatures and songs (especially from the Romantic era); in Minuets, Scherzos, *etc*¹². The Exposition, Development and Recapitulation of the Sonata Form follows the same formal pattern but in a more complex and specific way. In the so called ‘subdominant recapitulation’, the typical tonal disposition of the exposition (T – D) is maintained, and then transposed in the recapitulation so it begins in the subdominant and ends in the tonic (SD – T). A famous example of this can be found in the first movement of Mozart’s *Piano Sonata in C Major*, K. 545, ‘*Sonata Facile*’, as shown in Figure 1.4. It is worth noting that there is a tendency to keep the symmetry not only in terms of formal balance but also in terms of harmonic functions according to the circle of fifths.

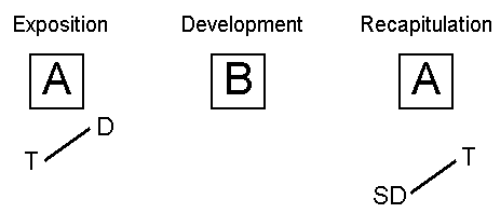


Figure 1.4

W.A. Mozart, *Piano Sonata in C Major*, K. 545 (first movement); formal scheme

Other formal symmetrical examples with 5 and 7 parts (usually based on the A – B – A formal pattern), can also be found. In the third movement of Beethoven’s *Symphony No. 7 in A Major*, op. 92 the usual 3-part Scherzo (Scherzo – Trio – Scherzo) is extended

¹² The formal pattern A – B – A appears frequently not only in music but also in other art forms such as architecture, film, *etc.* (Kempf, Op. cit., p. 156).

by means of repetition of the second and third parts together, creating thereby a 5-part form as shown in Figure 1.5a. It is worth noting that at the end of this movement, after the last recapitulation of A, there is a brief reference to the musical material of B before the final cadence, underling a strong intention of breaking the symmetrical pattern or provoking disorientation in terms of formal understanding. The 7-part formal type based on the classical rondo with three themes¹³ can be found in Schumann's *Aufschwung, No. 2* taken from the *Fantasiestücke* for piano, op. 12 as shown in Figure 1.5b. It is interesting to observe how the symmetry of the formal structure is preserved but, on the other hand, the proportion in terms of number of bars used in the last section does not correspond to what would be expected by the symmetrical pattern. The 8-bar last section (A) has a clear cadential function after section C assuming the greater importance, due to its size and central location within the whole.

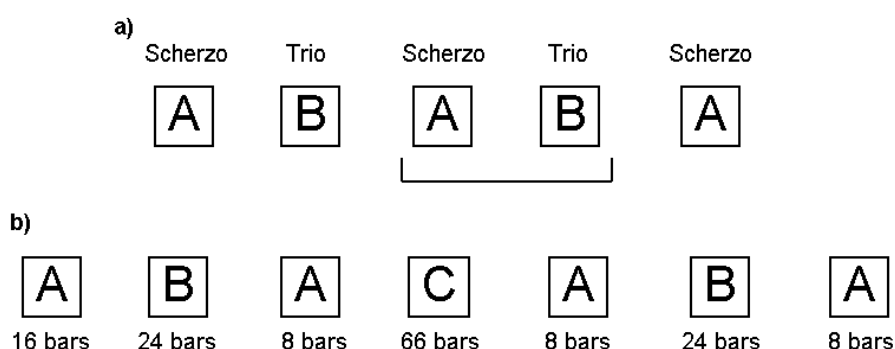


Figure 1.5

- a)** L. van Beethoven, *Symphony No. 7 in A Major*, op. 92 (third movement); formal scheme
b) R. Schumann, *Aufschwung, No. 2*; formal scheme

Another interesting example of symmetry is the one found in harmonic relations in tonal music, specifically used in binary forms such as the dance forms of the Baroque suite: *Allemande*, *Courante* and *Gigue*¹⁴. It appears when the first of the two complementary sections begins in the tonic and ends in the dominant, while the second part begins in the dominant and ends in the tonic: A–B (T D – D T). In terms of functional harmonic relations, similar mirror symmetry is applied in the micro-level musical planning. Figure 1.6a shows the two complementary two-bar phrases at the beginning of Beethoven's *Piano Sonata No. 3 in C major*, Op. 2, No. 3: the symmetrical pattern applied to the harmonic functions (T–D D–T) is clear. A similar formal/harmonic interrelation

¹³ Green, D.M., 1965. *Form in Tonal Music*. New York: Holt, Rinehart and Winston, p. 158.

¹⁴ *Ibid.*, p. 164.

applied to polyphonic music can be seen in the exposition of Bach's *Fugue in C Major* from *The Well-Tempered Clavier* (Book I) as shown in Figure 1.6b: the disposition of thematic entries *Dux – Comes Comes – Dux* (T-D D-T)¹⁵.

a) **Allegro con brio.**

b) **Moderato e maestoso.** (♩ = 116.)

Comes (D)

Comes (D)

Dux (T)

Figure 1.6

- a)** L. van Beethoven, *Piano Sonata No. 3 in C major*, Op. 2, No. 3 (bars 1 – 4)
b) J.S. Bach, *The Well-Tempered Clavier* (Book I), Fugue BWV 846 in C Major (bars 1 – 6)

Owing to the fact that the music written between the seventeenth and nineteenth centuries is almost exclusively either tonal or modal (and therefore contains a predefined, more or less rigid chordal system dependent on key), the concern given to symmetry is

¹⁵ Kempf, Op. cit., p. 158.

therefore limited. For example, a typical classical harmonic progression with regular succession of functions would be T D/SD SD D/D T. Its retrograde version T D/D SD D/SD T would be unusual as it does not follow certain tendencies and fundamental laws of classical harmony¹⁶. In this regard it is understandable that in music of the twentieth and twenty-first centuries, where though there is a greater plurality of styles there still remains a pronounced predilection for a musical language predominantly atonal, there exist multifarious examples of the application of symmetry and proportion in both the structure and form of music as well as in its micro-level parameters. The next chapter will demonstrate with the aid of a few examples, different ways in which these issues were applied to musical composition in the twentieth century.

¹⁶ Kempf, Op. cit., p. 159.

2. Symmetry and Proportion in Twentieth Century Music

From the last decade of the nineteenth century on, composers started searching for alternative capacities for their musical languages. It is widely accepted that the first half of the twentieth century demonstrated a great diversity of different composition techniques, resulting also in different modes of expression. What prior to the twentieth century could be understood as an intuitive search for proportional balance in music later became more concerned with issues such as symmetry and proportion, both playing a greater role in the compositional process in a more systematic and planned way. Irrespective of analytical results and compositional methods (the purely instinctive over the more logical) applied by the composers, what is important to retain is that the new century has created new ideas, that seek to radically diverge from conventional forms and/or methods¹⁷.

A famous example of proportional calculation is the Golden Section (or Golden Ratio); it is usually used to relate the size of different sections of a musical work. It comes about when the proportion of the whole to the larger part agrees with the proportion of the larger part to the smaller one. If the whole is considered as 1, the value of the larger section will approximately be 0.618 and that of the smaller section 0.382¹⁸, as shown in Figure 2.1.

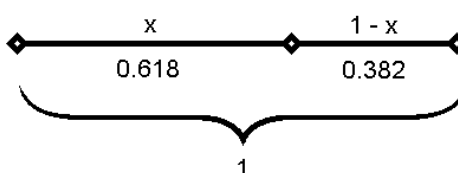


Figure 2.1

A prescient example of the application of the Golden Ratio in music in order to determine a proportional formal centre can be analysed in Claude Debussy's (1862-1918) *Reflects dans l'eau* from *Images* (1905). This piano piece has a total of 94 bars. If this number is multiplied by the Golden Section key number, i.e. 0.618, the result is approximately 58. The principal climax (bars 56 – 61) lies symmetrically over the piece's overall point of Golden Section¹⁹. The Hungarian composer Béla Bartók (1881-1945) is

¹⁷ Howat, R., 1983. *Debussy in Proportion*. Cambridge: Cambridge University Press, p.1.

¹⁸ Lendvai, E., 1971. *Béla Bartók: An analysis of his music*. London: Kahn & Averill, p.17.

¹⁹ Howat, Op. cit., p.4.

another well known example of a composer who uses Golden Section proportional principles in the formal calculation of his work. For instance, the first movement of his *Sonata for Two Pianos and Percussion* consists of 443 bars. If this number is multiplied by 0.618, the result is approximately 274. Bar 274 is important within the overall form of this movement as it represents the beginning of the Recapitulation. Such examples are easily found throughout the work of this composer²⁰.

It is understandable from the previous chapter that in the tonal system of major and minor keys associated with the laws of tonal counterpoint and classical harmony, that examples of symmetrical realisation within the works are limited. Paul Hindemith's (1895-1963) *Ludus Tonalis* (1942) for solo piano, considered by many to be the twentieth century equivalent of Bach's *The Well-Tempered Clavier*²¹, was composed in a system of expanded tonality and free contrapuntal style (with emancipated dissonance). The *Fugue in F* (number III), for example, is divided in bar 30 and reflected by means of an imaginary vertical axis, creating two symmetrical interrelated parts, stylistically and aesthetically coherent and consistent. Also the *Fugue in Des* (number X) is divided into two proportionally balanced parts; the second (starting at bar 18) is a complete inversion of the first. However, in these two examples there is a small violation of the symmetry by the addition of freely composed cadential lines at the end of both fugues. The symmetrical conception of *Ludus Tonalis* culminates in symmetrical interrelations between the *Prelude* and the *Postlude*, the later being the first played retrogradely and upside-down²². Also with regards to symmetry in terms of harmonic functions, it is worth having a brief look at Bartók's *Sixth String Quartet*. The four movements of this quartet are organised as follows: 1) *Mesto – Vivace*, 2) *Mesto – Marcia*, 3) *Mesto – Burletta* (Moderato) and 4) *Mesto*. The material of the *mesti* introducing the first three movements is then extended and varied in the last. If we analyse the first phrase of the first *mesto* according to the 'axis system' (Figure 2.2a) as purported by Ernő Lendvai²³, we easily reach an interesting conclusion concerning the use of symmetry in terms of harmonic function, as shown in Figure 2.2b. It is worth noting the structural importance of the G-sharp and its 'counter-pole' D, starting and ending the phrase. The subsequent phrases of this *mesto* also present a kind of general symmetry although not so rigorous and obviously analysed as the one shown here.

²⁰ Lendvai, Op. cit., p. 18.

²¹ Kempf, D., 1996. What is Symmetry in Music?. *International Review of the Aesthetics and Sociology of Music*, 27(2), p.160.

²² *Ibid.*, p. 163.

²³ The axis system is based on the circle of fifths and gives the same function (tonic, dominant and subdominant) to the notes situated on the same axis. (Lendvai, E., 1971. *Béla Bartók: An analysis of his music*. London: Kahn & Averill, pp.1-16).

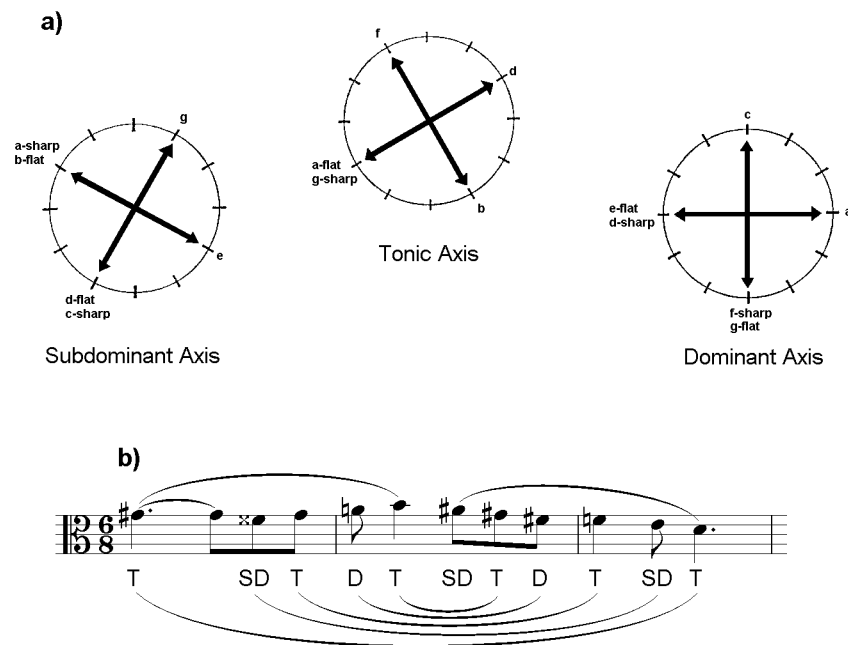


Figure 2.2
a) The Axis System
b) Bartók's *Sixth String Quartet*, first movement (bars 1-3)

Another recurrent concern shared by twentieth century composers is the rhythmical organisation within the work. Olivier Messiaen (1908-1992) was one of the composers who, arguably, contributed most to a specific compositional/technical thinking. As an example of symmetry, the use of non-retrogradable rhythms was, for this composer, a very important resource²⁴. Non-retrogradable rhythms remain unchanged when read from right to left. The most common and simple example of a non-retrogradable rhythm consists of three notes; the outer two note values are the same, with a different middle value. Numerous examples of non-retrogradable rhythms can be found in Messiaen's music; Figure 2.3 shows a simple example of a succession of non-retrogradable rhythms (one per bar) taken from *Danse de la fureur, pour les sept trompettes* from his *Quatour pour la Fin du Temps* (1941)²⁵.

²⁴ Messiaen, O., 1956. *Técnica de mi lenguaje musical*. Translated from French by D.B. López. Paris: Alphonse Leduc, pp.17-18.

²⁵ *Ibid.*



Figure 2.3

Non-retrogradable rhythms in Messiaen's *Danse de la fureur, pour les sept trompettes* from *Quatour pour la Fin du Temps* (F to G)

As for the use of symmetry associated with pitch, the treatment given to a dodecaphonic series is one such example. Figure 2.4a²⁶ shows the dodecaphonic row and its variants used by Anton Webern (1883-1945) in his *Symphony Op. 21* (1928). The processes of retrograde, inversion and retrograde inversion are the most clear and straight forward examples of symmetrical thinking; despite the fact that each note can be transposed to any octave, it is possible to underline the concern given to the symmetrical balance in the use of the intervals. It is also interesting to observe the distinctive harmony at the beginning of this piece, resulting from the superimposition of four different versions of the series used in fixed register, as shown in Figure 2.4b²⁷. The overall textural result is a consequence of the use of four-part counterpoint, forming two inverted canons: from the prime version (P0) of the series with its inversion (I0) and one of the transpositions (P8) again with its inversion (I8). The intervallic realisation of the inversion is done with the pitches in fixed register (E-flat is the only note used in two different octaves), which allows the intervals to respect the symmetry of each line, as well as the 'global' symmetry. Thus what is presented is a static chord, the timbre of which is explored aided by the technique of *Klangfarbenmelodie*²⁸.

²⁶ From now on intervals will be named by the number of semitones: minor 2nd = 1, major 2nd = 2, minor 3rd = 3, major 3rd = 4, perfect 4th = 5 (...), minor 9th = 13, etc. This terminology is used for certain very clear objective reasons: a) in a panchromatic world (implicit in twelve-tone technique) all semitones are of equal importance; b) intervals have lost their tonal function; only the size of the interval is relevant. (Bochmann, C., 2002. Non-serial criteria in the pitch-organization of Webern's Twelve-note works. *Revista Modus*, p.134).

²⁷ Marecos, C., 2011. *Interacção entre estruturas intervalares e estruturas espectrais, na música instrumental/vocal*. Ph. D. Universidade de Aveiro, pp.126-127.

²⁸ *Klangfarbenmelodie* (German for 'tone-colour-melody') is a musical technique that involves distributing a musical line or melody over several instruments.

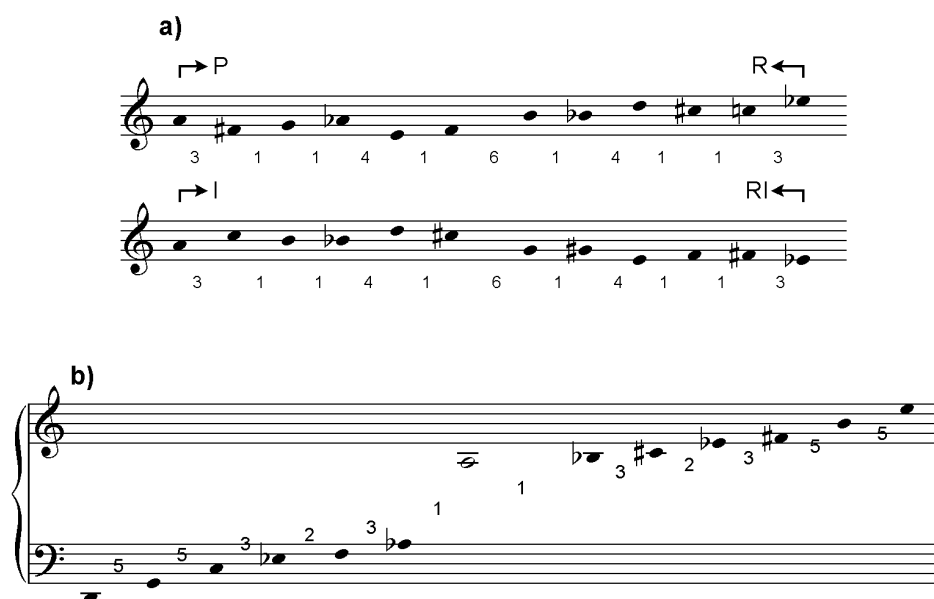


Figure 2.4

- a) Dodecaphonic row (and its variants) of Webern's *Symphony op.21*
 b) Symmetrical harmonic field at the beginning of Webern's *Symphony op.21*

With regards to other kind of pitch organisation not involving the use of a twelve-tone row, Polish composer Witold Lutosławski (1913-1994) believed that a certain 'harmonic field' is better characterised if a reduced number of intervals are used within an aggregate. Thus, each chromatic chord tends to be constructed with two or three types of intervals²⁹. The 12-note chords used by the composer can be seen as a set of pitches united by recurrent intervals. In this way, harmonic aggregates are perceived by their own characteristics, not only by the recognition of the intervals used, but also by the repetition of their intervallic pattern. His last song, *Church Bells* from *Five Songs* (1958, small orchestra version) is based on only two 12-note chords³⁰. By careful observation of the second chord, staring at bar 225 and shown in Figure 2.5a, it is possible to note the rigorous symmetry of its intervallic construction: it is formed by two (also) symmetrical groups of 6 notes each using intervals 2, 11, 6, 11 and 2, with interval 7 in the central axis. Each 6-note group is also symmetrical with interval 6 at the centre. Another interesting example can be found in Lutosławski's *Concerto for Cello and Orchestra* (1970), taking into consideration its basic harmonic structure (Figure 2.5b) which is built from intervals 3 and 4 with interval 1 in the central axis. By repeating this pair of intervals it is easy to achieve interval 7 which therefore confirms its repeated presence within the aggregate and *de facto* harmonic character.

²⁹ Rae, C.B., 1994. *The Music of Lutosławski*. London: Faber and Faber Limited, pp.50-51.

³⁰ *Ibid.*, p. 61.



Figure 2.5
 a) Second 12-note chord in Lutosławski's *Church Bells* from *Five Songs*
 b) Basic harmonic structure of Lutosławski's *Concerto for Cello and Orchestra*

Another composer who believes in issues concerning symmetry and intervallic proportion is Jonathan Harvey (b. 1939). His convictions about symmetrical harmony and the concept of 'bass-in-the-middle'³¹, shows the deviation from the 'gravitational attraction' of the bass (and building chords upwards from there) to the centre of a symmetrical axis. However, in his compositional planning there is a recurrent meeting point between intervallic and spectral thinking: in some of his pieces, Harvey attributes a primordial gravitation to a low fundamental. Nevertheless, his intervallic concern causes him to develop a hierarchical concept based upon a symmetrical intervallic axis, from which he constructs his symmetrical structures, moving the gravitational attraction from the bass to the middle. By using a symmetrical axis, a wide intervallic structure is obtained, as can be seen in the first (of seven) 'harmonic spaces'³² in the piece *Madonna of Winter and Spring* for orchestra, synthesisers and live electronics (1986), as shown in Figure 2.6. Harvey informs the construction of his harmonic spaces according to the harmonic series, although the comparison between the two reveals some clear differences: 1) the harmonic spaces are built with a succession of intervals that intercalate between small and large,

³¹ Harvey, J., 1984. Reflection after composition. *Contemporary Music Review*, 1, pp.83-86.

³² 'Harmonic space' is a term used by Harvey to best define the concept of 'harmonic field'. One of the differences between the two concepts is that the harmonic space is rarely used in totality, instead functioning similar to a mode from which specific internal characteristics can be explored: the intervallic combinations and its symmetrical relations. (Harvey, J., 1986. *Madonna of Winter and Spring*. *The Musical Times*, 127(1720), p.431).

whereas the harmonic series is presented with a sequence of intervals that become smaller and smaller and 2) the fundamental of the harmonic series is the lowest note of the aggregate, whereas in Harvey's harmonic spaces the intervallic structure is organised from the centre, providing a fundamental function to the middle axis³³. In the piece *Madonna of Winter and Spring* the concept of 'bass-in-the-middle' is relevant, as the central axis is the only common element to all the harmonic spaces used. This first harmonic space presents an intervallic structure based on the intervals 5, 2, 6 and 1. The internal intervallic relations reveal the importance of interval 7 in the harmonic structure, by adding 5+2 or 6+1.

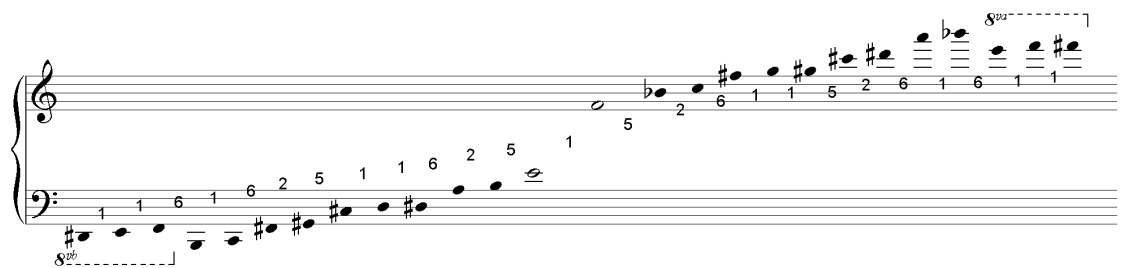


Figure 2.6
First harmonic space in Harvey's *Madonna of Winter and Spring*

Jonathan Harvey himself has strong feelings about his engagement towards the use of symmetrical structures with a central axis:

"The bass moves into the middle: this is our musical revolution. Several composers after Webern, myself included, have been fascinated by harmonic structures which radiate out from either side of a central axis in reflecting intervals. Unless a strong contrary line is taken in atonal music the bass will remain at the bottom of what sounds like dissonant music. But in symmetrical mirroring structures it is *forced*, focal attention is forced, into the axial middle, because all relationships converge there: the sounds *point* to it."³⁴

Due to the fact that the twentieth century has produced numerous compositional techniques, examples of the application of concepts of symmetry and proportion are easily found within the various parameters: formal organisation, rhythm, choice of pitch material, *etc.* The more or less systematic use of pre-determined compositional techniques and the

³³ Santos, S.C.C., 2005. *Harmonia, timbre e espaço em Madonna of Winter and Spring de J. Harvey*. M. Phil. Universidade de Aveiro, pp.62-64.

³⁴ Harvey, J., 1984. Reflection after composition. *Contemporary Music Review*, 1, p.83. The emphasis is in the original.

occasional violation of the mathematical rules are often justified for musical reasons. As Kempf (1996) concludes: "The presence of symmetry, achieved consciously or unconsciously, conserved or broken, guarantees nothing. Only in traces of a genial creative act, there is an ideal synthesis of all components relevant for great art"³⁵.

The following chapter will serve as an introduction to Christopher Bochmann's compositional thinking, allowing for special emphasis on his use of proportion, specifically in how it relates to all the parameters of his music.

³⁵ Kempf, Op. cit., p. 163.

3. Introduction to Christopher Bochmann's Compositional Thinking

English composer Christopher Bochmann (b. 1950) is one of the most prominent composition teachers in Portugal, where he has lived for the past 30 years. His catalogue includes works for almost all genres (solo, chamber, orchestral and opera), as well as numerous orchestrations and arrangements of existing works ranging from Debussy to traditional Portuguese folk songs. His musical style has undergone considerable changes in levels of complexity, from a modernist post-serial style, when he worked with aleatoric and open forms to a style embracing controlled levels of improvisation. Most recently, his music has incorporated a degree of simplicity, following specific tendencies towards post-modernism without resorting to neo-tonality.

His careful analytical approach to music in general is one of the most distinguishing characteristics of his musical thinking. In the last three decades, Bochmann has taught at most of the leading universities in Portugal, where arguably the vast majority of his students would have been influenced in some way by his principles of composition. However, it is wrong to regard Bochmann as the leader of a group of disciples or the instigator of a 'school' or movement. Although to date he has taught two generations of young composers (most of whom now pursue successful individual careers, some of international standing³⁶) very few of them actually use Bochmann's techniques *ipsissimis verbis*. Some of his technical principles of composition are so interesting and broad that they allow other composers to explore their own voices and modes of expression. Even if Bochmann believes that there is a direct correlation between techniques and aesthetics, it is nonetheless evident that differing languages have been created by his students dependent on their individual approaches to Bochmann's compositional processes. From a musically historical perspective, one can observe various examples of this, as a common technique can allow for different composers to create highly individual results.

In an interview with the *Portuguese Music Information Centre* in 2003, Christopher Bochmann has explained in detail his position towards music and musical composition³⁷.

³⁶ Bochmann's former students include Carlos Marecos (b. 1963), Luís Tinoco (b. 1969) and Pedro Amaral (b. 1972).

³⁷ The video of this interview (in Portuguese) can be found on the *Portuguese Music Information Centre* website (<http://www.mic.pt>).

It is important to state the principles of ‘intervallic qualities’ in music as defined by Bochmann. The importance given to the intervallic relationship between two notes (distance) is greater than the actual notes used in any register (regarding specific pitch, i.e. the ‘name of the note’). This principle is first characterised by the intervals used and does not accept the octave equivalence of the notes. Due to the absence of traditional functions (i.e. dominant, tonic, *etc.*) in atonal music, Bochmann believes that the intervals used most throughout a work will become an aural reference in their own right and hence assume a sonic importance to the ear of the listener. The points of reference are essential for the clarity of the musical discourse, as well as for the expressive and communicative component it can bring to the listener. Reinforcing this, one could say that the intervallic organisation can have an important role in terms of melodic and harmonic construction.

Let us explain this idea in a very simple way: the pitches E and C, for instance, create an interval 8 (minor 6th – i.e. 8 semitones) but they can also create an interval 4 (major 3rd – i.e. 4 semitones). The two examples (a and b) of Figure 3.1 show different intervallic qualities; the fact that interval 4 can be created with the same pitches as interval 8 (Figure 3.1a) does not on its own lend a special unity or major coherence to music based on a non-functional (non-tonal) context.

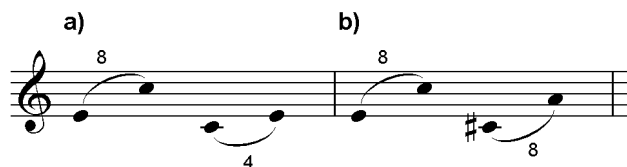


Figure 3.1

“We have the tendency to call ‘conjunct motion’ to the progression from an E to an F; and the same from an F to a G. In the latter, it only makes sense in a context where the whole-tone corresponds to a scale degree. When we talk about a chromatic scale, the whole-tone (F – G, for example) is no longer a conjunct motion as there is another note in the middle (F-sharp or G-flat). If we carry on applying the same terminology to contemporary music, our understanding becomes poorer. There is another typical example: in tonal music, we name major and minor thirds. The fact that both are named ‘thirds’ implies that there is something in common between them; which in tonal music is true. In atonal music there is a fundamental difference between a major third and a minor third: the first has 4 semitones and the second has 3 semitones.” (Bochmann, 2003)³⁸

³⁸ All the quotations are taken from the afore-mentioned interview; I have freely translated them.

In tonal and modal music the intervallic content of a scale is repeated in a pattern every octave (Figure 3.2a). Therefore, the pitches have the same function despite the varying registers or octaves. The same notes in different octaves have a strong relationship as they function in the same way. Figure 3.2b shows the relationship between dominant (V) and tonic (I) as an example. Also, chords based on an octave equivalent scale never lose their function irrespective of the position they are in (Figure 3.2c).

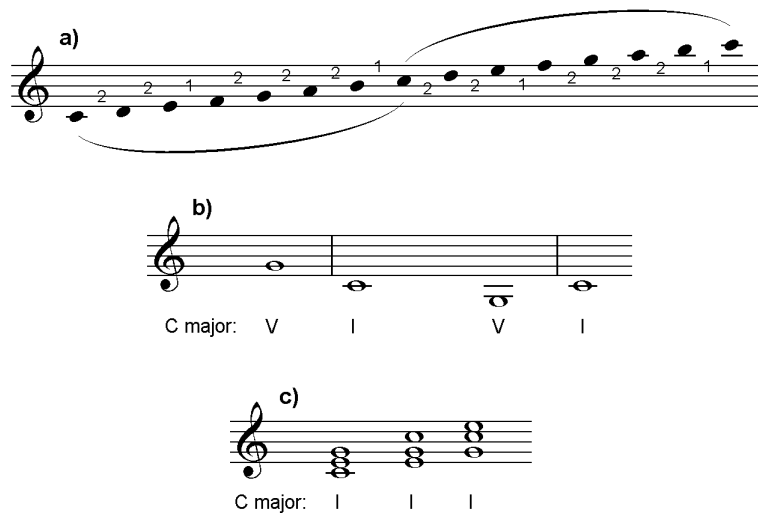


Figure 3.2

It is worth exploring how this applies to the octatonic scale (or Messiaen's second mode of limited transposition³⁹). The intervallic pattern of the scale is repeated every minor 3rd, four times within an octave, which gives a 'tonic' function to the notes C, E-flat, F-sharp and A (Figure 3.3a). Therefore, it is only necessary to write three notes of this scale as the intervallic content is repeated *ad infinitum* (Figure 3.3b). Perhaps fortuitously the four 'tonics' of this scale correspond to the *Axis System* as described by Ernő Lendvai⁴⁰ and briefly explained in the previous chapter (Figure 3.3c).

³⁹ Messiaen, O., 1956. *Técnica de mi lenguaje musical*. Translated from French by D.B. López. Paris: Alphonse Leduc, pp.87-95.

⁴⁰ Lendvai, E., 1971. *Béla Bartók: An analysis of his music*. London: Kahn & Averill, pp.1-16.

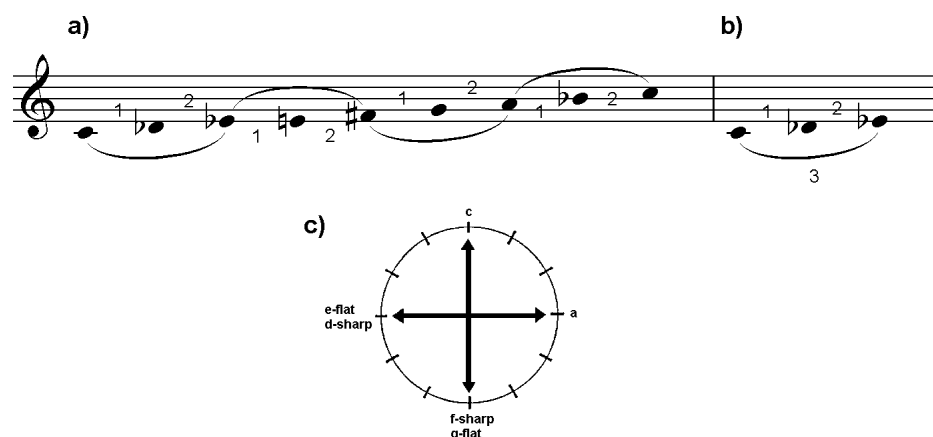


Figure 3.3

As an example of intervallic structures without the octave equivalence, it would be expedient to outline briefly the way in which Portuguese composer Carlos Marecos (one of Bochmann's former students) works. In his piece *Terra* (2009) for string orchestra, the intervallic structure (formed with intervals 1 and 3) constitutes the general harmonic field (Figure 3.4). The sequence of intervals is repeated after 15 semitones (3, 3, 1, 1, 3, 3, 1). Thus, interval 15 assumes the equivalence of the structure: the harmonic field starts at D₂ and repeats its structure from F₃. If we give a function (a – h) to each element of the harmonic field (according to their linear intervallic position within the aggregate), it is possible to observe one of the characteristics of a 'non-octave scale': the same function given to different pitches (F₂ and G-sharp₃, for example); on the other hand, the pitches C-sharp₃ and C-sharp₄ have different functions within the aggregate⁴¹.

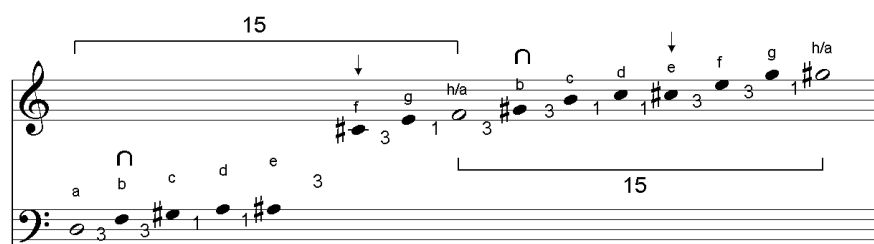


Figure 3.4

Due to the fact that in some atonal music the sound organisation does not repeat its structure every octave, the raw material (Figure 3.5a) can be reduced to two notes (Figure 3.5b), providing a 'tonic' function to all the notes.

⁴¹ Marecos, C., 2011. *Interação entre estruturas intervalares e estruturas espectrais, na música instrumental/vocal*. Ph. D. Universidade de Aveiro, pp.60-61.



Figure 3.5

The functional equivalence of all the elements has very important repercussions⁴²:

- 1) There is no 'pole' or consequent hierarchy, unless the composer creates them purposefully. There is a true 'democratisation' of all the elements used. The notes are all related to one another, negating an absolute value (or 'tonic').
- 2) Each note has its own identity as important as any other note within the aggregate: there are no differentiated functions; therefore there are no octave-equivalent functions⁴³: interval 12 is the most consonant combination of two notes. Also, intervals 19 and 7 have a high degree of consonance, whereas intervals 6 and 1 have a high degree of dissonance⁴⁴.

For this issue, Bochmann has also created a new term; like many other terms used in musical languages, Bochmann's has a Greek etymology: the word 'isobematic' comes from 'ἴσος' (meaning equal) and 'βημα' (meaning step). It refers to music based on equal steps⁴⁵.

"We are no longer talking about a major scale based on whole tones and semitones, or any combination of two types of steps. We are talking about a musical 'system' all based in a semitone scale, or quarter tone scale, or sixth tone scale; where all the steps are equal." (Bochmann, 2003)

According to this definition the whole-tone scale is also isobematic as it is constructed with major seconds only. Unlike the major scale, which is based on two types

⁴² Bochmann, C., 2004. *A música isobemática*. Lisbon:(not published), pp.2-3.

⁴³ Bochmann, C., 2008. *Lição de Síntese: O registo na música serial e o pensamento intervalar*. Évora:(not published), pp.8-9.

⁴⁴ Schönberg's refutation of 'consonance' and 'dissonance' related to the harmonic series will be taken into consideration whenever mentioning these two terms: consonances are the intervals formed by the first overtones of the harmonic series whilst distant overtones create intervals that can be considered 'dissonant' when related to the fundamental. (Schönberg, A., 1922. *Armonia*. Translated from German by R. Barce. Madrid: Real Musical, pp.13-17.)

⁴⁵ Bochmann, C., 2002. Non-serial criteria in the pitch-organization of Webern's Twelve-note works. *Revista Modus*, p.138.

of steps and consequently whose functions are very clear (the leading note for example has a very distinctive attraction to the tonic), the whole-tone scale lacks such distinct contrast as all the notes are separated by the same interval and therefore have the same function.

In order to fully clarify my recent observations it is necessary to make one final analysis in association with the harmonic series: Figure 3.6 shows the frequencies in Hertz (Hz) of the harmonic series starting from the fundamental C₁. It is interesting to observe that in terms of pure tones, the frequencies are equidistant and thus possible to relate the harmonic series to the 'isobematic' principle described by Bochmann providing that the measurement is made in Hertz. However, as there is a logarithmic correlation between a frequency measured in Hertz and our perception of that frequency described as a pitch⁴⁶, what we hear is, in fact, the relation between frequencies, i.e. intervals. For example, E₃ with 329.63Hz and C₄ with 523.25Hz form a minor 6th. Considering this interval as a deviation of cycles per second, it has the value of 193.62Hz. What we actually hear is the ratio between frequencies, in this case 8:5, i.e. 1.6 (if tempered tones are considered). The ear recognises the same interval in any part of the register⁴⁷ once the ratio between frequencies is the same. If we move the C down an octave, the interval formed with the E is a major 3rd: E₃ with 329.63Hz and C₄ with 261.63Hz, the difference is 68Hz and the ratio between the two frequencies 5:4, i.e. 1.25. Thus, in acoustic terms, when moving the pitches up or down an octave, the proportion between frequencies is altered⁴⁸.

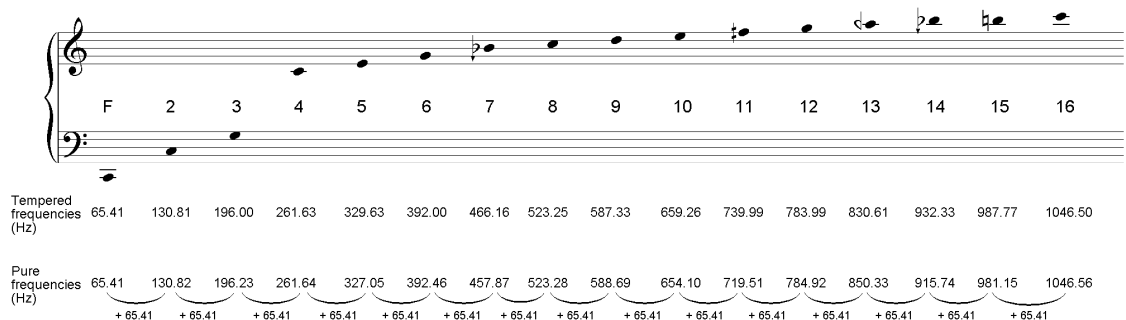


Figure 3.6

⁴⁶ Simoni, M. ed., 2006. *Analytical Methods of Electroacoustic Music*. New York: Routledge, p.1.

⁴⁷ In the extreme bass and treble registers, the same proportions do not exactly reflect what is psychologically perceived. (Cook, P., 2001. *Music, Cognition and Computerized Sound: an introduction to Psychoacoustics*. London: The MIT Press, pp. 150-151).

⁴⁸ Marecos, Op. Cit., pp. 59-60.

Continuing with the 'isobematic' concept, specifically in order to apply it to other musical parameters, Christopher Bochmann believes that everything in music is relative, for example:

"In a 4/4 bar in tonal music we tend to denominate the first beat as 'strong' and the second as 'weak'. This means that the second beat has a different function from the first. Basically, almost every piece of music which is tonality based and written in 4/4 will end with an articulated note on the first beat of the bar. This is somehow automatic because the first beat is the one that resolves, thus being more important than the others in the hierarchy. But in music that does not imply tonality or time signature (i.e. without hierarchies) everything is equal, everything is isobematic: the semitones, the quavers, the semiquavers, the triplets, *etc.* (...) It is a matter of relating one thing to the other. If the rhythm for example has a long note and a short note – what is the proportion between the two? Is it a ratio of 3:4 or 2:3 or any other more complex proportion? If we have two notes, what is the relation between them? If we have a texture... what is the relationship between this texture and any other? Thus, everything - no matter whether we are talking about texture, form, duration, pitch - is relative." (Bochmann, 2003)

The proportions used in most of Bochmann's work are related to the Lucas sequence⁴⁹: 1, 3, 4, 7, 11, 18, 29, 47, 76, ... The choice of these numbers is primarily related to the intervals used. Bochmann limits the use of different intervals in order to allow the 'sound world' created to more readily establish distinct aural references.

Despite these numbers being directly related to the Golden Ratio, they are not used by Bochmann to estimate the golden section of a particular work or a movement/formal section. They are however used to relate the different musical parameters to each other: pitch (intervals), rhythmic figures (durations), structure/form (size of sections), number/density of musical occurrences, *etc.*

Figure 3.7 exemplifies the melodic use of the Lucas numbers. It is worth noting that starting from an interval related to the series and following to a new, adjacent element also related, it necessarily equals another interval that will be within the same kind of proportion⁵⁰.

⁴⁹ This is a variant of the Fibonacci sequence (1, 1, 2, 3, 5, 8, 13, 21, 34, 55, ...) in which each number is defined as the sum of the two previous terms.

⁵⁰ Marecos, C., 2005. *O pensamento intervalar*. Lisbon:(not published), p. 1.



Figure 3.7

The same principles of proportion can be observed in the rhythmic organisation: the specific rhythmic figures used in Bochmann's music are calculated through the division of the unit ($\text{♩} = 1$, for example) by numbers relating to the Lucas series:

- demisemiquavers ($\text{♩} = \text{♩}/4$),
- semiquaver triplets ($\text{♩}^3 = \text{♩}/3$),
- dotted semiquavers ($\text{♩} = 3/4 \text{♩}$)
- grace-notes (an approximation of $\text{♩}/7$ or $\text{♩}/11$).

The Lucas numbers are also recurrently used to multiply the unit (♩) or any resulting rhythmic figures by any divisions of the unit shown above (♩ , ♩^3 , ♩). Therefore, it can be asserted that the use of such exclusive criteria converge to form a unified final result. Such musical coherence is achieved by avoiding using different 'rules' for the different musical parameters.

However, in Bochmann's music the use of these proportions is not done in a linear way, increasing or decreasing: 1, 3, 4, 7, 11 or 11, 7, 4, 3, 1. The application of these numbers is practised according to another important concept to the composer: the 'contour'. Thus, the use of such numbers can be presented by the order: 7, 4, 3, 11. In this way, proportions are demonstrated and used irregularly.

The most commonly used contours in Christopher Bochmann's music are the ones with 3 and 4 elements, underlining once again the use of the numbers taken from the Lucas series. These contours are used in four different ways: in the so-called prime version (P), and its respective derived versions: retrograde (R), inversion (I) and retrograde inversion (RI).

Figures 3.8 and 3.9 represent the four types of 3 and 4-element contours respectively used by Bochmann⁵¹.

⁵¹ Whenever mentioning these contours, I will use the following terminology: 3P, 3R, 3I and 3RI for the 3-element contours and 4P, 4R, 4I and 4RI for the 4-element contours.

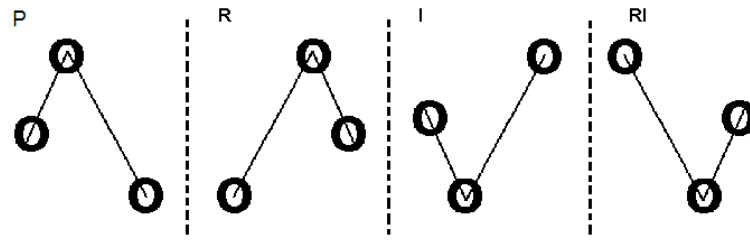


Figure 3.8

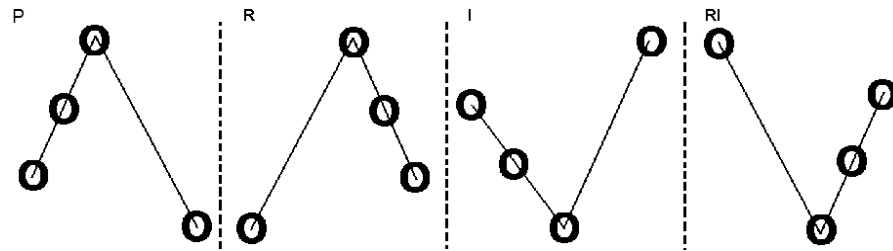


Figure 3.9

It is also possible to find in Bochmann's music other types of contours (which are a variation or combination of the contours shown above) whose number of elements also relate to the Lucas sequence. His use of 7 and 11-element contours can be seen occasionally, derived from sums of 3+4 (or 4+3) and 4+3+4 (or 3+4+4; 4+4+3).

As already mentioned, Christopher Bochmann designates these concepts for use across all potential musical parameters. In order to gain a better understanding of Bochmann's compositional principles in action we must look closely at *Lament* for 15 players⁵², composed in 2001. The following brief analysis will focus on the use of proportion and contour applied to the formal structuring, as well as to melody, durations, dynamic levels and the number/density of material/musical occurrences.

Form in *Lament*

This piece is divided into two contrasting 'parts' - Bochmann deliberately avoids the term 'movement' in identifying the two parts. Whilst he himself shies away from such a term, the characteristics of each 'part' are so strikingly different as to appear completely unrelated, therefore rendering the perception of two individual movements unavoidable.

⁵² The score is published by the *Portuguese Music Information Centre* and available for free consultation at <http://www.mic.pt>. See Appendix.

The notion of 'contour', as explained above, is used to generate the form of the piece and to calculate the proportions between sections and subsections.

The first part of the piece is divided into three subsections, the proportions between the sizes (durations) of which are: 4, 3 and 1, respectively. The second part has one subsection only and the proportion is defined by the number 7 (see Figure 3.10).

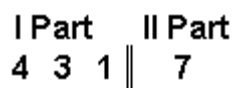


Figure 3.10

By observing the scheme of the ratios between the two parts, one can see the proportional use of the contour 41 in relation to the formal organisation.

The second part of *Lament* is constructed by the alternation of two elements: A1 – B – A2 – B – A3 – B – A4. It is once again clear that Bochmann uses the Lucas series when repeating A and B four and three times respectively. Subsections A have a fixed duration of 47[♩] and subsections B, 47[♩], 29[♩] and 65[♩] respectively, thus using contour 31. Number 65 is not immediately recognisable within the Lucas series. However, it can be calculated by adding 47 and 18 together. Both these numbers are related to the present series, thus 47 - 18 = 29 (B2) and 47 + 18 = 65 (B3).

Melody in *Lament*

When speaking of melody in the works of Christopher Bochmann one must remember that any subsequent analysis should focus on intervals used, rather than specific pitches.

The whole first subsection is constructed through the polarisation of the notes presented in Figure 3.11a. In aural terms it is worth stating that these notes are not recognisable as a melody, but rather, they are 'starting points' from which other musical gestures are generated. The use of Lucas series lends coherence to the compositional planning, i.e. finding the notes for formal differentiation. However, this melody would sit well within the contours typically used by the composer. This 7-note melody can be

divided into two types of contours: 3I and a variation of 4I. This succession of notes is the ‘enlargement’ (augmentation) of another recurrent succession used by Bochmann to determine polarising points in his music (Figure 3.11b).

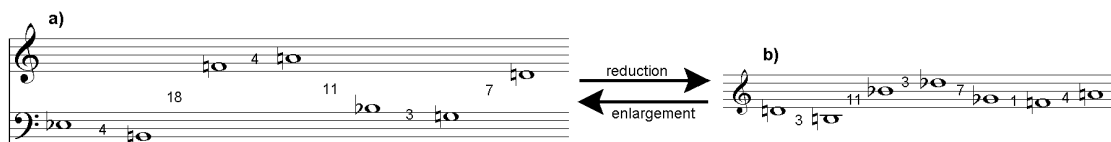


Figure 3.11

Bochmann’s processes of ‘enlargement’ and ‘reduction’ consist of the substitution of an interval for adjacent intervals also proportionally related, in this case with the Lucas sequence⁵³. Comparing the two melodies shown above, the following substitutions can be observed: 4 → 3; 7 → 4; 11 → 7; 18 → 11.

Figure 3.12 demonstrates the use of other types of 3 and 4-element melodic contours in the first part of *Lament*.

Figure 3.12

The subsections A (1 – 4) of the second part of *Lament*, based on parallel chords, can also exemplify the use of the same ‘philosophy’ (Table 3.1).

Subsection	Rehearsal mark	Contour
A1	17	3I and 4I

⁵³ Here we can use the prescient analogy of photography – words such as ‘focused’ and ‘unfocussed’ constantly appear in Bochmann’s vocabulary when defining the clarity of a musical discourse – to liken the processes of enlargement and reduction with the *zoom-in* and *zoom-out* capabilities of a camera.

A2	19	3R and 4P
A3	21	4RI and 3P
A4	23	3RI and 4R

Table 3.1

It is worth noting in the previous example that all four versions of both 3 and 4-element contours are used.

Durations in *Lament*

As explained earlier in this chapter, Bochmann uses a limited number of rhythmic figures resulting from the division of the quaver ($\text{♪} = 1$) by the numbers of Lucas series. The result of these divisions and the quaver itself can also be multiplied by values corresponding to the afore-mentioned proportions. Once again it is clear that the same principle is applied to various musical parameters.

At the beginning of the piece the strings play a single chord; articulated seven times it prefigures the general harmonic conversion to a unison D. The rhythmical articulation of this chord is planned as shown in Figure 3.13, with the initial rest included. The numbers of the durations indicate the process of multiplication of the semiquaver triplets by numbers contained in the Lucas series. The 7-element contour is easily analysed by the application of 4I and 3P.



Figure 3.13

At $\boxed{5}$ the oboe, clarinet and bassoon play a chorale. In the same way as shown above, it is also possible to calculate the values 18, 11 and 29 derived from the multiplication of the semiquaver triplets, presenting contour 3I.

Similar to this last example, another chorale appears at $\boxed{7}$, this time played by the flute, oboe, clarinet and alto saxophone to the following durations: 18, 11, 7 and 29. These

numbers are also expressed by the multiplication of semiquaver triplets and use contour 4I.

Dynamic levels in *Lament*

Using Bochmann's compositional 'tools' to analyse dynamic levels in *Lament* is still possible (though not as straight forward a process as seen with other compositional parameters); a consistent approach to contour and proportion is clearly evident in the two examples (both chosen from the second part of the work) I have analysed (see below). It is worth mentioning that Bochmann's approach to the distribution of dynamics is not calculated as systematically nor it is informed as rigorously as the previously discussed aspects: here the application of numerology is conspicuous by its absence. Bochmann's solution to the use of dynamic levels in his music is inherently subjective and does not consider measurement in decibels.

As mentioned above, the subsections A (1 – 4) are based on parallel chords with three musical phrases each. Table 3.2 indicates the order in which the dynamic values are used in each phrase together with its corresponding contour types (P, I, etc.).

Subsection	Dynamic level	Type of contour
A1	<i>p, mp, pp</i>	3P
A2	<i>pp, p, mp</i>	(unidirectional)
A3	<i>mp, pp, p</i>	3RI
A4	<i>p, mp, pp</i>	3P

Table 3.2

As the table above demonstrates, the dynamic level contour in A2 is unidirectional, moving away from the concept of contour demonstrated thus far. However, the emergence of this exception is not incongruent in Bochmann's language; it is reached by applying another important concept for the composer: 'rotation'. The idea of rotation is based on the movement of the first element to the end or vice-versa. Table 3.2 clearly shows the constant rotation of the last element to the beginning, thereby creating an exception to the applied contours hitherto encountered, but maintaining the coherence which justifies its place alongside Bochmann's other recurrent processes.

The second example is evident in the general dynamic level of the B subsections in the second part of *Lament* (see piano part for example): *p*, *mp* and *pp*: contour 3P.

Density of musical occurrences in *Lament*

Similar proportions and contours are also applied to the density of musical occurrences, for instance the number of notes used in a certain melodic line.

The three-phase chorales observed in subsections A (1 – 4) from the second part of the piece are a good example: the number of notes contained in each phrase may be expressed in the following manner: A1 – 3, 4 and 1 note(s); A2 – 1, 3 and 4 note(s); A3 – 4, 1 and 3 note(s); A4 – 3, 4 and 1 note(s). The types of contours used are respectively: 3P, (unidirectional), 3RI and 3P. It is interesting to note that the formation and use of a unidirectional contour is possible through the application of rotational principles as explained above.

The application of contours to determine the density of musical occurrences is also inherent in subsections B from the second part of *Lament*. In B1 (18) the piano plays three gestures of 3 notes; in B2 (20) it plays one gesture containing 7 notes and in B3 (22) three gestures of 4 notes each - by deduction then: 3, 7 and 4 notes used, corresponding to contour type 3R.

The concept and indeed importance of contour is also identifiable in the first part of *Lament*; the section between 2 and 8 (inclusively) can be first characterised by the use of solo lines in the woodwind. The number of notes contained in each melodic phrase (4, 7, 11 or 3 notes, for example) also demonstrates the application of contours as has been analysed previously.

Harmony in *Lament*

Although the harmonic/vertical construction of Bochmann's music (specifically in *Lament*) does not lend itself to being analysed according to Bochmann's own ideas of contour, it is worth looking in more detail at the way intervals are used. Figure 3.14 shows the first three chords played by the woodwind and brass at the beginning of the piece. If a different function is given to each interval (a – e, from the bottom to the top), interesting

occurrences can be seen. Interval (a) is used in a constant process of 'enlargement' ($7 \rightarrow 11 \rightarrow 18$) from chord **1** to **3**; interval (b) is kept the same (interval 4) throughout the progression (the brass sustain D₃ and the alto saxophone repeats/re-articulates B-flat₂). The three upper notes of the aggregate are transposed 4 semitones up from chord **1** to chord **2**, keeping intervals (d) and (e) as they are but creating a new interval (c) – interval 11. The progression of these 3 notes to chord **3** is achieved in the same way: the upper part of the aggregate is transposed 4 semitones up creating again a new interval (c) – interval 15, calculated by the sum of $11 + 4$. Interval (e) is kept as it is and interval (d) is achieved by the application of the process of 'enlargement' ($4 \rightarrow 7$), as has been seen previously.

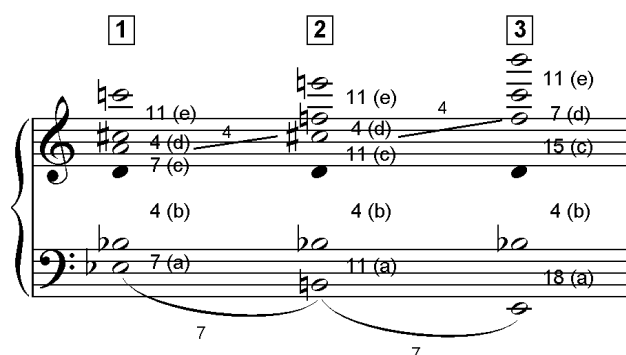


Figure 3.14

Finally I wish to draw the reader's attention to rotational processes occurring in Bochmann's harmony, bearing in mind what has been discussed in this chapter: the importance of the interval above the specific pitch. If we take the first chord of the previous example it is possible to rotate the upper interval to the bottom of the aggregate creating, thus, a proportionally balanced new chord (Figure 3.15). It is worth stating that the chord in the example is disposed in a way of favouring the balance of the harmonic series, i.e. larger intervals in the lower register and smaller intervals in the higher register, revealing another of Bochmann's compositional idiosyncrasies.



Figure 3.15

The compositional ideas discussed in this chapter regarding Bochmann's principles are evident in my own music and thus, the relevance of this chapter in my thesis should not be underestimated; the wider implications of Bochmann's teaching have influenced my overall approach to composition. Even if I do not apply Bochmann's principles in as rigorous a way as he, the use of proportion is integral in the 'drafting' of a new piece and is consequently inextricably linked to the music's creation.

In the following chapter, I will explore the use of proportion in relation to the construction of harmony, in particular symmetrical harmony whose close relationship with intervals is of course prominent.

4. Symmetrical Harmony – Construction and Usage

*“The harmonic domain is unavoidably inherent to art music;
it becomes a problematic issue in every post-tonal music,
demanding in each case an individual solution”*

(Claus-Steffen Mahnkopf, 2002)⁵⁴

Based on the main issues examined in the previous chapter, specifically Bochmann's concern with the importance of intervallic qualities/proportion in his music, the current chapter serves as a brief introduction to the way I construct and use symmetrical harmony in order to facilitate the comprehension of the commentaries/analyses pertaining to the seven original compositions contained in the portfolio which will follow in the next section of this thesis.

One piece of information that is necessary to retain from the previous chapter is the importance of intervals and the consequent non-equivalence of the octave within the musical material (pitches used). As previously maintained, it is not justifiable to use the octave as an equivalent interval in a system that is not based on a mode (or scale) where inherent internal intervallic structures are repeated every octave. What is essentially relevant is that the musical material can generally be recognised and characterised by the intervals used. In music that is not tonal and does not exhibit tonal functions, the more recurrent intervals would become familiar to the ear, therefore assuming the importance of points of reference and consequently aiding perception of the work, as well as lending coherence to its technical and aural organisation.

From the notion of a ‘central note’ or ‘central interval’, the following explanation regarding symmetry takes into consideration some of the intervallic ideas already discussed whilst introducing new approaches to the construction of harmony: -

The principles applied when constructing a symmetrical chord are rather simple. The symmetrical harmony is constructed through the use of a central note or a central

⁵⁴ Mahnkopf, C.-S., 2002. Theses Concerning Harmony Today. In: Mahnkopf, C.-S. Cox, F. and Schurig, W. ed., 2002. *Polyphony & Complexity*. Hofheim: Wolke Verlag, p.65.

interval⁵⁵. The chords are not built from the bass note up, but from the centre. A symmetrical chord is a group of more than two notes that, once divided at the centre, offers two equal parts containing the same intervals disposed upwards and downwards. Figure 4.1a shows the central intervals used to create symmetrical chords consisting of an even number of notes; Figure 4.1b shows examples of symmetrical chords using the same central intervals. These central notes are an example of a possible starting point; the middle axis can subsequently be set anywhere in the register providing the intervallic symmetry used to generate the chord has been respected.



Figure 4.1

To create symmetrical chords with odd numbers of notes, one must use homogeneous three-note symmetrical chords to define the central axis as shown in Figure 4.2a. Figure 4.2b shows examples of symmetrical chords using the central three-note middle axes.

⁵⁵ My starting point is usually E₃ or F₃ (or interval 1 that corresponds to both notes played together) as it is the centre of the piano (my main working tool) and allows for the same number of notes down and up the register. This is a useful resource when working with symmetrical harmony, as well as for allowing the creation of an 'aural tonic' when one of these notes (or both together) are polarised.



Figure 4.2

As stated earlier, the construction of these chords is straight forward: once the central interval or note is established, the upwards and downwards intervallic construction should be equal. Though contrary to the acoustic nature of the harmonic series in its equal horizontal construction and to a certain extent destabilising the acoustical balance inherent in any given register, the resultant chords still manage to establish intervallic stability for the ear.

There are specific ways to link symmetrical chords. What follows is a common systematisation of the way I work using 4-note symmetrical chords (the most commonly seen in my music). It is clear from Figure 4.3 that: **a)** movement of the top two notes, creates a new interval in the axis; **b)** movement of the two lowest notes creates a new interval in the axis; **c)** movement of the central notes generates a new interval at both the top and bottom of the aggregate as well as at the axis; **d)** movement at the extreme ends creates a new interval at the top and bottom of the aggregate; **e)** movement at the extreme ends and at the centre generating a new interval at the top, at the axis and at the bottom of the aggregate.



Figure 4.3

The choice of intervals should be dependant on the degree of contrast one wants to achieve within the harmonic aggregate. As in Christopher Bochmann's work, the concern for the intervallic qualities of a chord is consistently at the fore thinking: it is

important to limit the number of intervals used so that the most recurrent ones encourage a strong bond with the ear. The fact that a chord is symmetrical already restricts the number of intervals contained within. The intervals used throughout most of my music are also related to the proportions contained within the Lucas series⁵⁶: 1, 3, 4, 7, 11, ... The occasional use of other types of intervals is usually generated by the summation and/or subtraction of numbers in the sequence, for example $10 = 11 - 1$ or $7 + 3$; and $6 = 7 - 1$. These numbers are almost exclusively related to only the intervals used as, unlike Bochmann, other parameters within my music are not so pre-determined. Nonetheless it is possible to find principles of proportion and symmetry in other musical parameters, though their creation is due to a more intuitive approach. The use of other intervals beyond the ones already stated is also possible. By using 'unfamiliar' intervals there is a deliberate attempt to create contrast with the ones already recognised by the ear. The occasional use of a more heterogeneous mixture of intervals is justified by the intention of avoiding a polarised centre and thus creating an aural instability. The audible differences which colour one's perception of consonance/dissonance are wholly dependent on the number of (different) notes and intervals in a chord; clearly the more notes and mixture of interval types a chord has, the more complex and dissonant it becomes.

In the majority of my work, the formal plan and the idea of 'playing' with audience perception are my two main priorities. It is my express desire to work with the different degrees of contrast available using symmetrical harmony together with other compositional resources such as tonality, the natural harmonic series which characterises each instrument, the use of micro-intervals to ornament the pre-defined pitches within the aggregate as well as the use of asymmetrical chords that maintain the same internal proportions (intervals). There are various examples of symmetrical chords I use which could also function within tonal harmony. Although they allude to standard tonality, they are used in my music as individual entities, i.e. once they are disposed symmetrically, they respect the coherence of the compositional thinking and thus lose their individual tonal references. Figure 4.4 shows examples of some of these chords.

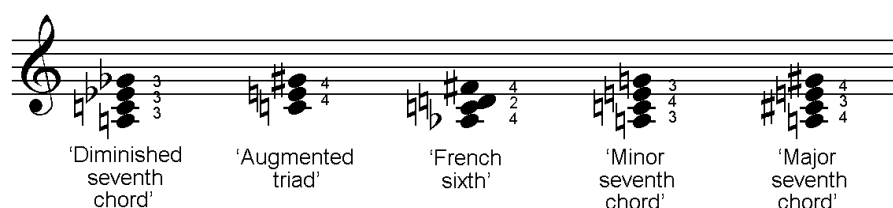


Figure 4.4

⁵⁶ See 'Introduction to Christopher Bochmann's compositional thinking'.

Within my own compositions the way in which I apply symmetrical harmony varies from one piece to another. My intention is not to systematise the use of symmetry to make consistent a rigorous way of composing. However, it does not seem to me inappropriate to make consistent use of a system that can guide our thinking and organise one's creativity. I approach the use of symmetrical chords in a relatively abstract and intuitive way: it is a means to an end. Using symmetrical chords by themselves does not constitute 'composing', it does however open a door to a particular way of thinking that inspires the creation of any music so desired (in that I mean one is free to work with any style of language, aesthetically free). Though applied in a less rigorously systematic way, there are other parameters in my music whose structure implies symmetrical thinking or, at the very least, are proportionally constructed: forms and their constituent structures; melody, lines and contours; rhythms; stability *versus* instability; ensemble layout and finally, the musical notation itself.

In the next section of this thesis I will demonstrate through the analysis of seven original compositions all the issues discussed thus far. All of the works share common compositional 'concerns' whilst at the same time presenting new issues to tackle.

Commentaries

Section 2

This section deals with the analysis of the seven original compositions contained in the portfolio. Although all of them utilise elements of symmetry and proportion, the focus of each analysis is tailored to a different aspect of the work in order to reveal more extensively the potential of these issues in contemporary composition.

Each of the following commentaries comprises information about the creative motivation behind the work in question as well as a brief analytical overview. The reoccurrence of references to certain technical issues has been unavoidable as all works share a common technical background and their omission would lead to an incomplete picture of the different works in analysis.

The pieces have been presented in an order designed to help clarify issues, rather than their order of composition.

I. *Fragmente-Spiel* for solo flute (2008)

*“...every reception of a work of art is both
an interpretation and a performance of it,
because in every reception the work takes on
a fresh perspective for itself”*

(Umberto Eco, 1962)⁵⁷

The idea for *Fragmente-Spiel* (or ‘Game of Fragments’) for solo flute arose from the self-imposed necessity to explore a personally unknown compositional path; therefore the original starting point is, in a sense, experimental. The motivation behind taking what was for me a ‘new risk’ in my work evolved from my reading of Umberto Eco’s *La definizione dell’arte* (1968) in which I was reminded of a previous work of his, *Opera aperta* (1962). Through the combination of some of his arguments such as the influence of the performance in the (post)creation of a work, and the desire to pay homage to the then recently deceased composer Karlheinz Stockhausen (1928-2007), I wanted to compose a piece where I could use a common principle explored by both Stockhausen and Eco: an ‘open work’ whose formal organisation varies from one performance to another, depending on the player. The concept of ‘open work’ or ‘open form’ is based on principles of total or partial liberty given to the formal linking of musical gestures within a piece; it is the order of presentation of these gestures which is ultimately decided by the performer, though each has been carefully calculated to function within a range of specific parameters, to lesser or greater degrees depending on my compositional precepts. The final options are left ‘open’, which allow the player to act as a creative agent, in other words, being put on an almost equal footing regarding the composition of the work as the audience perceives it. These ideas were explored by composers such as John Cage (1912-1992) and Earle Brown (1926-2002).

The idea for *Fragmente-Spiel* was to create a labyrinth of fragments where the performer starts on the first fragment and begins a journey eventually leading to the last fragment (number 24). There is only one direct way that links these two fragments. The duration of the piece depends on the performance; getting to the ‘wrong’ fragment, the

⁵⁷ Eco, U., 1989. *The Open Work*. Translated from Italian by A. Cancogni. Cambridge, MA: Harvard University Press, p.4. The emphasis is in the original.

piece can actually last for a long time. Figure I.1 shows the direct way towards the end and how the fragments which are out of the main path create a kind of loop. At each step (fragment), the player has two or three options available: for example, after playing fragment 1 the flautist chooses to proceed to fragments 2, 17 or 18. There is a certain degree of freedom as to the 'path' through the piece chosen by the performer; this leads to an inevitable variation in the duration of the piece. Although composed specifically to allow for the capricious nature of choice (so that each 'path' through the work is as valid as the next), there does exist a 'direct' way as shown in the diagram below, which is of a fixed duration of ca. 3 minutes.

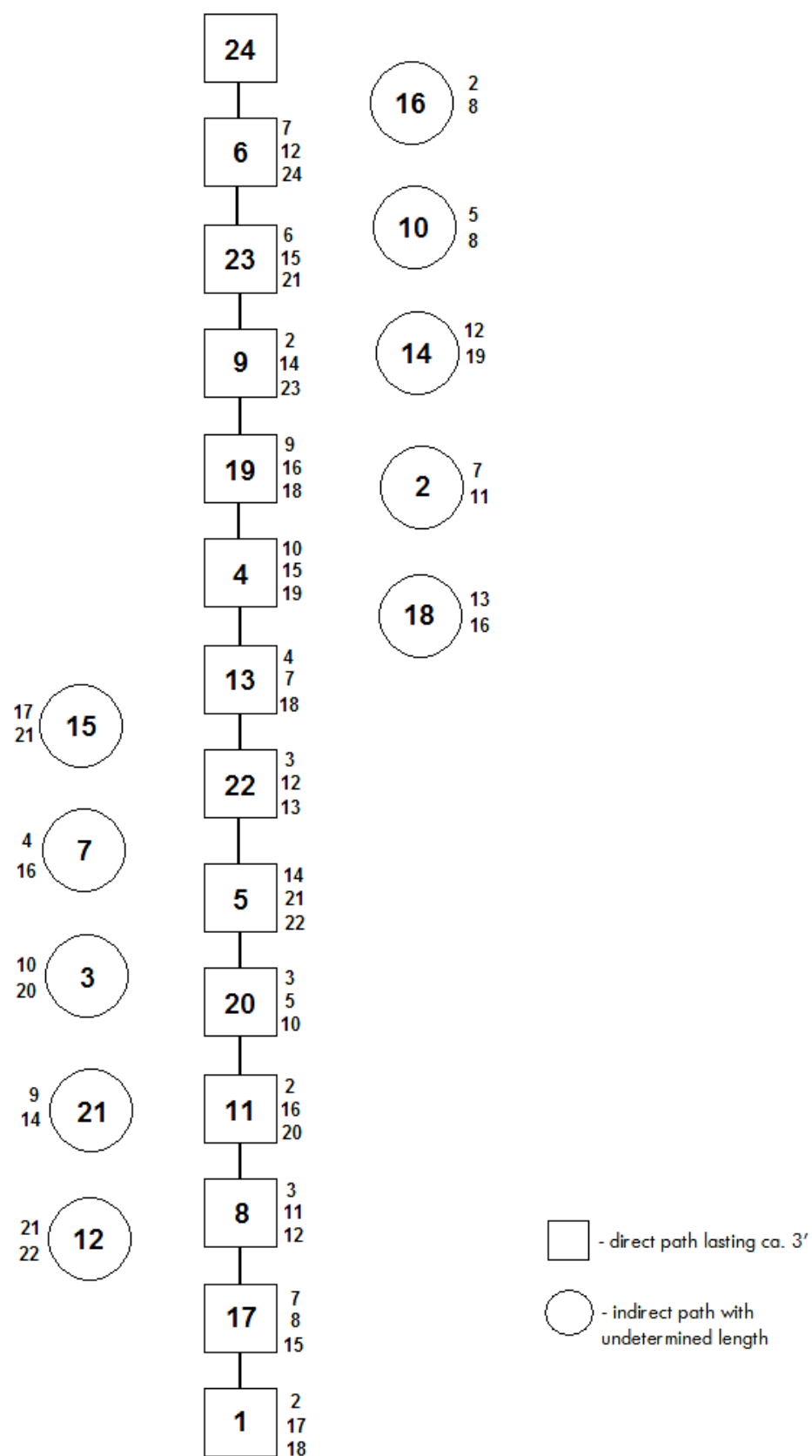


Figure I.1

Fragmente-Spiel was the most fragmented piece I had written at that point. The idea of deliberate fragmentation of material leads to a 'chaotic' formal organisation in relation to the clear and perceptible forms exhibited in my previous works. Hitherto I felt that a perceptible formal structure aided clarity of communication with the audience. It is only really necessary for the performer to understand the 'game' behind the conception of this piece. Concern was given to allow some significant identity to fragments 1 and 24, clearly creating a beginning and an end. This was achieved by the use of extended techniques in both fragments: in the first fragment the use of overtones and humming; and in fragment 24 the use of a multiphonic as a conclusive gesture. All the other fragments are mostly characterised by the use of *staccato*, melodic leaps, trills, lip *glissandi*, flutter-tonguing, key clicks and lyrical two or three-note melodies.

Although this was not the first time I had derived melodic lines from harmonic fields I found it challenging whilst combining the idea of symmetrical harmony with a solo melodic instrument. However, in this piece the principle is used in a more systematic way in order to demonstrate the 'intervallic thinking'⁵⁸ linked to the idea of sound symmetry. This technique of breaking up a chord is not a new compositional resource; indeed, its antecedents are arguably seen in the 'Alberti bass' used in classical music. The melodic/harmonic structure is very simple and it can be exemplified through the score reduction and intervallic analysis as shown in Figure I.2. As is evident, for each fragment it is possible to analyse one, two or three symmetrical chords. All the other notes that are not in the example are considered separated intervals that do not belong to the general harmony, i.e. they are ornamental notes. However, these intervals are predominantly 7 and 11, which occur frequently in my music.

⁵⁸ See 'Introduction to Christopher Bochmann's compositional thinking' in Section 1 of this thesis.

Figure I.2 displays a musical score consisting of 24 numbered measures (1-24) on a single staff. Each measure contains a complex chord with multiple notes and accidentals. The chords are symmetrical, meaning they are composed of intervals that repeat in a specific pattern. The notes are often beamed together, and the accidentals (sharps and flats) are used to create specific pitch relationships. The measures are arranged in six groups of four, with numbers 1-4, 5-8, 9-12, 13-16, 17-20, and 21-24. The key signature is one sharp (F#).

Figure I.2

It is obvious that my intention when creating these symmetrical chords was not to allow the listener to hear them as clear 'harmonic fields'. This is one of the examples where the creative principles regarding symmetrical harmony were utilised for a different aim: the generation of a 'pitch pool'. It is worth noting that, when 'breaking' a chord, the intervals between the notes are, in general, not the ones which were initially planned, as shown in Figure I.3. This usually provokes the perception of two layers of intervals

sounding concurrently: the ones contained in the ‘harmonic field’ and the ones played melodically.

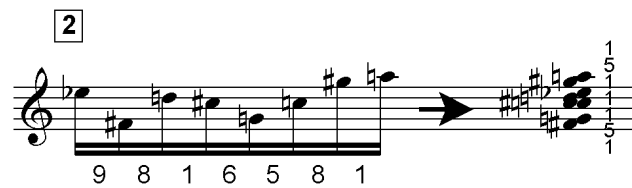


Figure I.3

As for other symmetrical elements in the piece, it is possible to pinpoint some examples such as the use of both symmetrical contours (Fragment 10, Figure I.4a) and rhythms which can be seen between two different fragments (Fragments 4 and 21, Figure I.4b).

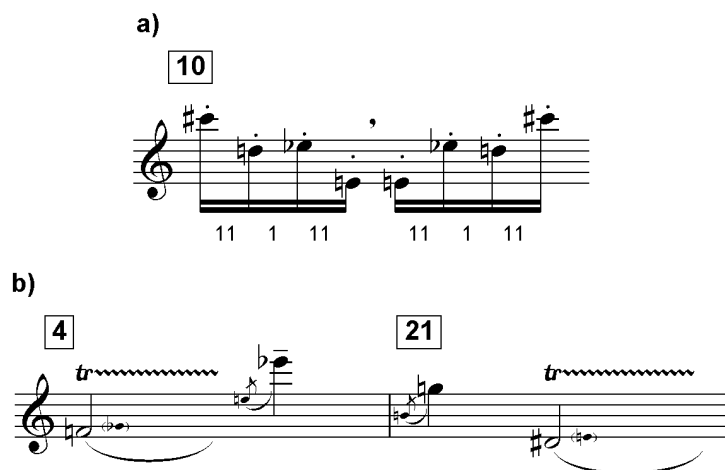


Figure I.4

As noted above, the application of symmetrical principles in this piece is rather simple. *Fragmente-Spiel* functions mainly as a study for solo instrument, based on intervallic relationships. Technical preoccupations concerning the composition of *Fragmente-Spiel* has in turn opened a door to new musical ideas used in the other pieces analysed in this thesis.

II. *Gestures III: (untitled)* for 4 trumpets in C and percussion (2008)

Gestures III: (untitled) was commissioned by Deal Festival 2008 and written in collaboration with Bella Tromba and the percussionist Stephen Burke, who have demonstrated tremendous kindness in accepting the ideas that gave birth to the piece.

Gestures III: (untitled) is the third work bearing this generic title – the two preceding being *Gestures I* (2006) for solo piccolo and any four instruments (or four groups of any instruments) and *Gestures II: conversations about a contour* (2006) for clarinet, piano and two percussionists. *Gestures III: (untitled)* makes the exploration of musical gestures its priority, in terms of aesthetic control as well as from a compositional point of view. The idea of superimposing different layers of musical material has been both one of my main preoccupations and compositional resources, not least because of the way music plays with ‘audience perception’. In this particular work the issue of degrees of musical ‘perception’ depends on the geographical position of the listener within the audience; the trumpets’ starting positions are onstage but as the piece develops each player moves around the performance space⁵⁹. To each musical gesture I have associated a different timbre, inspired by the varying sounds/timbres trumpet mutes can create. The percussion works almost as an independent element ultimately being influenced by (and reacting to) the gestures of the trumpets. In addition, the trumpet material is in a constant process of transformation.

The cycle *Gestures*, constitutes a kind of *alter ego* in my musical creation. These pieces work as ‘test tubes’ for gestures and ideas that end up together in a piece. The importance of gesture as a means to create a functional musical discourse is the overriding compositional ‘concern’ in my cycle. In order to understand and contextualise the ideas related to this cycle it is necessary to briefly refer to the other two pieces: -

Gestures I is written without any defined pitch, the only notated materials are the rhythms, the gestures, the dynamics and the contours. Each player has to improvise the notes according to register indications on the score, i.e. within a certain register the

⁵⁹ The idea of ‘spatialisation’ in music consists in the use and localisation of sounds within the physical space. Among the various works which ask for the players to be positioned in unorthodox performance positions in relation to the audience one can highlight Karlheinz Stockhausen’s (1928-2007) *Gruppen* (1955-57) and Harrison Birtwistle’s (b. 1934) *Secret Theatre* (1984).

instrumentalist would play any note according to the rhythm and gesture notated. In *Gestures II: conversations about a contour* the sections vary between those containing rigorous notation (specified pitches and rhythms) and those with freer notation as used in *Gestures I*, i.e. leaving the choice of the notes to the player. As previously stated, the cycle *Gestures* works as a 'test tube' because the final musical result of these pieces is rather different from the expressive continuity I try to explore in my other works. Therefore, as these pieces work as 'experiences', *Gestures I* provided the 'raw' musical material for *Inventio* for orchestra (2007, rev.: 2009) and *Fragmente-Spiel* for solo flute (2008); and *Gestures II* generated the musical material for *Four characters taken from a tale* (2007) for clarinet, violin, violoncello and piano. With regards 'recycling' the same musical material for use in different pieces (whilst acknowledging this practice is far from new) it has been an idiosyncratic characteristic of my compositional thinking for some time. Throughout my *oeuvre* I have the desire of unifying each constituent work and therefore this is a very prominent resource within my musical writing.

Returning once again to *Gestures III: (untitled)* and its analysis, particularly in relation to proportion it should be noted that the larger structure was conceived in five different sections which are 'smoothly' joined to one another. The proportions (duration) between them are approximately 6 : 4 : 4.25 : 5.25 : 3.75. The exact duration of each section depends a lot on interpretation, as the graphical notation and the movement of the trumpeters around the audience vary from performance to performance. The fact that all sections are connected without any general pause throughout makes the understanding of these differences even more difficult. However, these proportions (devised during the process of pre-planning) aims at creating an irregularity in the size of the different sections. Ultimately, the reference to issues of durational proportion became a means to an end, guiding and informing the compositional process and providing clear parameters in which to develop the work as a whole.

Section A (from the beginning up to D) is characterised by a single gesture on the trumpets using the Harmon mutes to produce a *wa-wa* effect, *versus* a *quasi*-independent musical layer played by the percussionist. At this point all the players are onstage in front of the audience. Figure II.1 shows the chords played by the trumpets in Section A. All the symmetrical chords shown represent the harmonic progression (played by the trumpets) of the first section of the piece. The first seven chords are used from the beginning until one bar before A; the next four chords are used from A until two bars before B; the next chord at B. The remaining three chords are used from C until one bar before D. The

numbers of chords used are 7, 4, 1 and 3: all numbers make part of the Lucas sequence. The recurrence of intervals 6 and 7 here is absolutely intentional. Intervals 1, 3, 4 and 5 are the ones that occur more frequently; leaving intervals 2, 8, 9 and 11 as a contrast to the ones already established. It is also worth referring to the concern given to the voice-leading: as there are four groups of chords corresponding to four small subsections (7, 4, 1 and 3 chords, as stated previously), the voices are distributed to the four trumpets in a way of achieving internal movement within the ensemble. Thus trumpet 1 does not solely play the top note nor trumpet 4 the lowest. The chords are orchestrated evenly across the four.

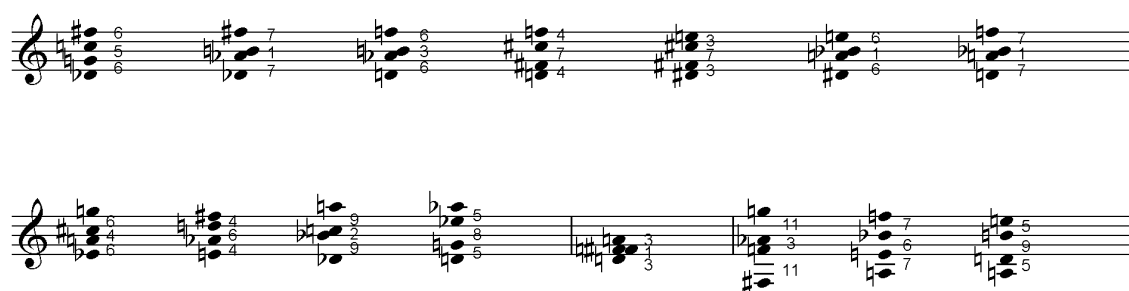


Figure II.1

There is clear evidence of the superimposition of quavers, triplet quavers, semiquavers and quintuplet semiquavers in order to create rhythmic irregularity and avoid homophony. A similar observation can be made concerning the dynamic levels which vary between *pp* and *mf*, with *crescendi* and *diminuendi*. Beyond the beginning of each subsection, none of the trumpets play the same dynamic level at the same time, thus creating a cross-fade of intensities.

The notes played by the vibraphone in Section A are analysed in Figure II.2a. All these intervals and chords are played by the vibraphone and end three bars before B. All the pitches shown in the example are used melodically (they are bowed) and the durations were chosen specifically to avoid homophony with the trumpets. Figure II.2b shows how these notes connect to the symmetrical chords played by the trumpets, creating concords within the harmonic plan of this section. Regardless of any inferred harmonic connection between the trumpets and the percussion, the differentiation of the gestures is quite clear.



Figure II.2

At two bars before **B** the role of the percussion becomes increasingly independent of the rest of the ensemble, playing symmetrical chords that are not related to the general harmony. The independent harmonic nature of the percussion is used to help demarcate the different musical layers. To a certain extent (and as can be seen throughout this analysis), the separate functions of the instruments within the ensemble as a whole greatly influence the overall defining characteristics of the work. Gestures are treated independently (soloistically) and, taken together (with each instrument within the ensemble contributing) help to form a more general accompaniment.

Two bars after **C**, the vibraphone plays a melody that is not related to any 'symmetrical principles': the notes are chosen by the use of intervals 1, 3, 4, 6, 7 and 11; these being the most recurrent and therefore personal in my work. The use of two intervallic principles (symmetrical harmony on the trumpets, and linear melody on the vibraphone) allows the creation of musical tension before changing to a new section.

Section B (from **D** to **H**) of *Gestures III: (untitled)* is characterised by the movement of the trumpets to new positions around the audience (see 'ensemble layout' on the score). To a certain extent and due to its relative duration (the smallest of all the constituent sections) it is somewhat unavoidable that it functions as a bridge to Section C. The visual as well as theatrical element of this small section represented at the time of composition something new in my work; *Gestures III: (untitled)* is the first piece I wrote whose instructions in the score include not only the movement of the players but also the direction of the trumpets' bells in relation to the audience. In *Gestures III: (untitled)* the concept of 'gesture' is extended to encompass the visual as well as the purely musical aspect of live performance.

Starting from **D**, the trumpets play the chord shown in Figure II.3a. The B-natural is played by the first trumpet which is in motion, whilst the remaining three notes are taken by the trumpets 2 – 4 inclusively. At **E**, trumpets 1 and 2 play the symmetrical chord shown in Figure II.3b. The white note in the example is the one played by the second trumpet which is in motion; the remaining notes are played by the first trumpet, which starts a completely new gesture once it is placed in the new position. Trumpets 3 and 4 sustain interval 11 at **E** and **F**. The percussion retains its independent role, playing repeated intervals and notes which are unrelated to the general harmony, underlining the intention of avoiding a static harmonic field. At **F**, trumpet 1 plays an incomplete symmetrical chord with one note missing as shown in Figure II.3c. If compared to the situation happening at **E**, where the second trumpet is moving off stage, at **F** the same principles apply, but as there is no trumpet player in motion, the missing note would represent the missing movement. At **G** the choice of the notes is more intuitive but is still based on characteristic intervals.

Figure II.3

Section 3 (from **H** to **Q**) is characterised by trumpets 1, 2 and 4 (which are already in their new positions around the audience) taking on independent material: one gesture for each player. Trumpet 3 is silent throughout. This section does not have any defined pitches written and the players have to improvise the notes according to the musical gesture notated. Each trumpet has a specific gesture that passes from one to the other until they all reach a different gesture. This is all achieved during a process of slow transformation. Even though I do not use any pre-defined 'pitch pool', instead relying solely on the performers' independent choices, some symmetrical principles still apply: the three trumpets positioned offstage in a symmetrical way (see diagram in the score) are the ones playing and the percussionist (who is onstage) is conducting them. By inferring a circular pattern to the order of melodic gestures (i.e. each trumpet 'contaminates' the other by passing on its gestures) the process of transformation adheres to a *quasi*-symmetrical idea. Once again, the visual and theatrical side of the piece is explored. The concept of 'gesture' is not only applied to the musical material, but also to the visual side announced by the gestures of the percussionist whilst conducting. The position of the listener within

the audience also has an important role: their own perception of the musical discourse dependent on where they are in the auditorium. The proportions used to govern each change of gesture played by the trumpets are calculated in seconds and used in an irregular way.

In Section 4 (from **Q** to **U**) I revisited an old solo trumpet piece *Dialogues* (2006) in order to ‘borrow’ some gestural ideas which I thought would complement the dramatic nature of the narrative I had set up in *Gestures III: (untitled)*. At **P** it is beholden on the vibraphone to once again prepare the transition to the new section by virtue of the re-introduction of symmetrical harmony. Section 4 is characterised by the complete liberation of independent musical line within the ensemble. Each player has independent material that is superimposed in a *quasi*-chaotic way. The fact that all the players are distributed throughout the available space allows for a clear and contrapuntal perception of all the gestures that surround the audience. All gestures used in the fourth section, regardless of character, culminate in material which is placed within bars marked with repeat signs, their duration indicated. Figure II.4 shows the symmetrical harmony used in these ‘frozen/static’ harmonic moments and also justifies (symmetrically) the pitches played on the vibraphone.

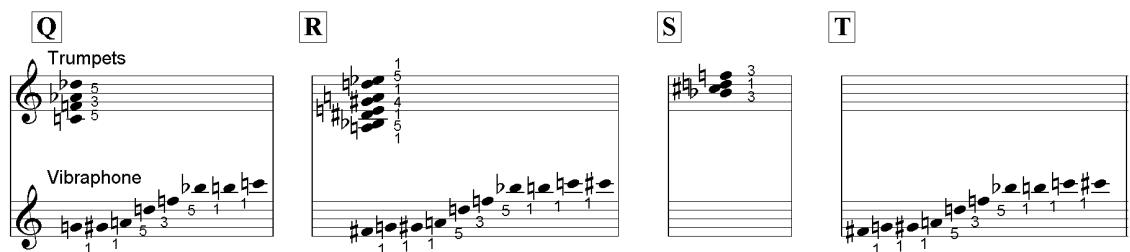


Figure II.4

In the final part of *Gestures III: (untitled)*, Section 5 (from **U** to the end of the piece) there is the use of symmetrical harmony alongside the natural harmonic series. At this point, and despite the fact that all of the trumpets are still separated around the performance space (please note that trumpet 3 and the percussionist are kept onstage throughout the piece), there is a gestural convergence, i.e. all the trumpets are unified in a common gesture in favour of a general sonority. Figure II.5 shows the symmetrical chords played by the trumpets. The remaining gestures (natural harmonics and unidirectional lines using intervals 1, 2 and 3) are used to create harmonic discordance with these chords.



Figure II.5

In this analysis it has been my express intention to systematically show the pitches I generated and the ways in which they were subsequently used. *Gestures III: (untitled)* exhibits the most consistent formal planning with regards the harmonic fields which characterise each section, the use of symmetrical chords acting as the predominant unifying agent within the work as a whole. With respect to the harmonic language, the exploration of musical gestures was always at the heart of my compositional aesthetic. The way in which the narrative of the piece is allowed to progress through the preconceived structure I prepared for it should allow for the focus of the listener to be drawn to the central themes of movement (as they are expressed in physical gestures) and visual symmetry (dependent on the offstage positioning of the players).

The idea of symmetry is also perceptible in the musical notation: once Sections 1 (first) and 5 (last) are the ones with conventional notation, i.e. defined metres, *etc.* The central sections are written with free notation and use *quasi*-improvisational material.

As for the general form, there is no direct symmetrical relation within the musical material used. However, a 'symmetrical journey' is implied by the trumpets which start onstage in front of the audience and end the piece moving out of the performance space behind the listeners.

One may also note that simple elements of symmetry can be seen in terms of instrumental function, whereby it is clearly evident that the instruments assume more and independent roles (soloistically inclined melodic lines in the trumpets, for example) whilst coming to what could be convincingly termed a 'gestural consensus' at the end of the piece.

III. *Loose messages* for flute, harp and string quartet (2009)

Loose messages is, I believe, the most fragmentary work in my *oeuvre*. Unlike *Fragmente-Spiel* for solo flute (2008)⁶⁰ which is intended to be a game of fragments, *Loose messages* is intentionally written in order to show different musical objects at any given time. The major difference between these two pieces is in the choice of the final formal progression. In *Fragmente-Spiel* the order in which the 24 different fragments are performed is given to the performer, though even then the choice is governed by certain parameters. By contrast *Loose messages* is formally organised with the juxtaposition of different musical fragments (or ‘messages’) chosen entirely by the composer and thus not conforming to the idea of ‘open form’ previously explored in the earlier *Fragmente-Spiel*.

Loose messages was composed after a long period of little creative activity where I was already ‘pre-composing’ the opera *Os mortos viajam de metro*⁶¹. This work is in an attempt to consolidate ideas that had accumulated in my mind, also serving as an instrumental study for the afore-mentioned opera. Written in ‘mosaic form’⁶² (in contrast to the more linear narrative which characterises the majority of my other work), *Loose messages* uses material which functions in a similar way to a series of small statements which, after their initial placement within the narrative are then varied, juxtaposed, superimposed, etc. Some of this material then ‘ramifies’; the constituent statements in turn forming dialogues with one another as they pass through the ensemble like distorted, abstract messages. The ensemble is used to create a seeming narrative of ‘discontinuity’, i.e. sometimes there is a focus on the group’s homogeneity, at other times I sought to create ‘distance’ between the different instrument’s relationships to one another, providing a more heterogeneous (soloistic) sonority. *Loose messages* represents a kind of summary of the two pieces previously analysed (therefore, aspects concerning composition already mentioned will not be repeated): *Fragmente-Spiel* and *Gestures III: (untitled)*. The use of musical ‘fragments’ together with the superimposition of gestures in order to create a soloistic and/or ensemble dichotomy, were considered the fundamental aspects in the work’s construction.

⁶⁰ See ‘Commentaries – *Fragmente-Spiel*’.

⁶¹ See ‘Commentaries – *Os mortos viajam de metro*’.

⁶² ‘Mosaic form’ refers to the juxtaposition of contrasting musical gestures [for example, Stravinsky’s *Symphonies of Wind Instruments* (1920)] as opposed to a more linear/continuous succession/development of the musical material.

Loose messages was commissioned by *Sounds New Contemporary Music Festival 2009 – Polish Connections* and clearly shows the influence Polish composer Witold Lutosławski has had in my music, mainly in the use of similar textures and also in terms of notation, specifically regarding the use of independent lines.

As previously stated, this piece is mainly built upon superimposed gestures played by the individual instruments with a specific focus on timbral differentiation. The following analysis of *Loose messages*, will focus mainly on the formal planning and how this determined the choice of instrumentation and musical content.

The piece is divided into three sections; the first two sections are subtly connected and the last is a *quasi*-independent section:

Section 1 – Introduction (homogeneous strings)

Section 2 – (heterogeneous *tutti*)

Section 3 - (heterogeneous/homogeneous *tutti*)

As a consequence of the individual thinking in the composition of each of these sections, it is convenient that this analysis is presented in parts, focusing on one section at a time.

Section 1 (from the beginning to C)

Section 1 (first page of the score) works as an introduction and features the string quartet only. This short section has five musical gestures (or subsections) separated by general pauses: α^{63} – A – B – B – A, as shown in Figure III.1.

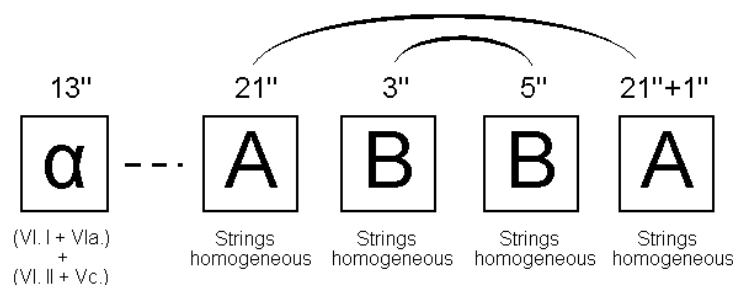


Figure III.1

⁶³ The character α (Alpha) was used to differentiate the introductory element, as well as the subsequent subsections.

There is a purposeful break in the symmetry of the subsections (gestures) in order to create a formal imbalance at the micro-level. Subsection α is not recapitulated in the end as one would expect (by the suggested symmetrical pattern). This is done with the express intention of 'surprise' when section 2 begins. Subsection α represents a 'strange object' within the micro-structure planning, constituting an exception or anomaly. It is worth examining the duration (in seconds) of each of these subsections; the numbers are respectively, 13 – 21 – 3 – 5 – (21+1)⁶⁴. All these numbers belong to the Fibonacci series and also underline the symmetry between the subsections A – B – B – A: 21 – 3 – 5 – (21+1), where number 21 appears in the extremes and the smaller numbers of the series appear in the centre.

Section 1 is also characterised by the homogeneity of the string quartet whose individual instruments contribute to the ensemble's general sonority. In all of the three musical gestures (α , A and B), the quartet functions as one unified instrument.

Section 2 (from C to K)

The introduction of section 2 should surprise the listener: not only its micro-structure imbalance (asymmetry) with section 1 but also by the sudden inclusion of both the harp and flute. This section is divided into five subsections, each of them with individual characteristics. To facilitate the comprehension of the division of these subsections, the rehearsal letters in the score will also be used to name the five subsections. Thus, these subsections start at C, D, E, F and H respectively.

Subsection C: characterised by the use of a trio with independent material (soloistic), aided with the initial punctuation (*col legno battuto*) of the two violins and viola. The gesture of the flute is essentially based upon the ornamentation of F₄ by intervals that became increasingly larger. The harp's gesture is presented with arpeggiated symmetrical chords based on the intervals 2, 4 and 6⁶⁵. And the musical gesture of the violoncello is characterised by melodic lines, exploring the register of the instrument and using intervals 1, 2, 7 and 11.

⁶⁴ It is possible that the accuracy of these numbers will not be understood during the performance and consequently, it might not be possible to 'feel' these differences as they are stated. The use of these proportions only serves for the formal planning, seeking a macro-structure whose durations are balanced.

⁶⁵ The summation of these intervals total 12 and thus correspond to the octave. The harmony chosen for the harp material took into consideration the operating characteristics of the instrument; the acceptance of the octave helped to maintain the symmetry.

Subsection D: characterised by the uniformity of the string quartet with one gesture only + flute with a 'pointilistic' gesture (*staccato*) + harp with arpeggiated chords.

Subsection E: characterised by the use of violin I + harp with independent (soloistic) material, starting with echoes from the other instruments (except violoncello) whose gestures started in the previous subsection.

Subsection F: characterised by the uniformity of the string quartet material (one gesture only) + simple scalar passages on the flute⁶⁶ + chordal gestures (each preceded by grace notes) on harp.

Subsection H: characterised by the use of (flute + viola) + soloistic material on harp, ending with a 'pointilistic' gesture (*sempre staccato*) expressed throughout the ensemble, followed immediately by a 10-second general pause.

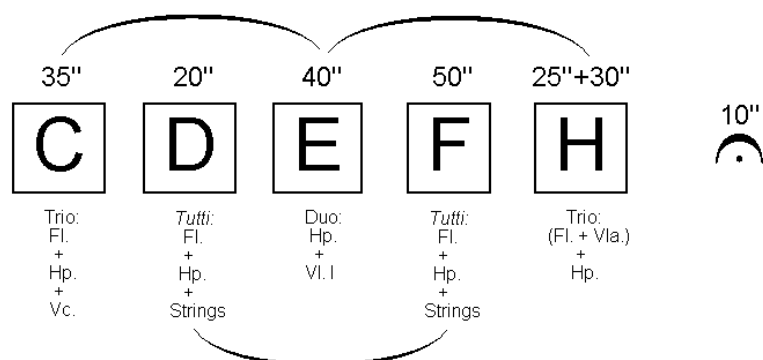


Figure III.2

Figure III.2 shows the formal scheme at the micro-level used in section 2 of *Loose messages*. Subsections C, E and H are characterised by the exploration of superimposed heterogeneous solos (in a trio – duo – trio, respectively). These three subsections use *ad libitum* notation, i.e. without defined time signature, allowing for a sense of freedom to the execution of the solos. The subsections D and F present a homogeneous use of the string quartet (one gesture for the whole quartet) contrasted with independent gestures on the flute and harp. These two subsections use time signatures and tempo markings, applying

⁶⁶ The flute plays scales representing the Portuguese knife sharpeners who walk around towns with a bicycle whistling similar tunes on their pan flutes.

a more accurate rhythmic expressivity to the ensemble. The use of symmetry with regards the micro-structure of section 2 should be clear, this influenced the choice of instrumentation as well as the integral character of the musical gestures used. It is worth noting the duration (in seconds) of these subsections: subsections C, E and H (with the 10-second pause) last a total of 140 seconds; the total duration of subsections D and F is 70 seconds, i.e. half.

Section 3 (from K to the end of the piece)

This section is also divided into five subsections: K, L, M, N and O. The first two are characterised by the heterogeneity of the ensemble where the superimposition of gestures used in the first two sections of this piece are contained.

Subsection K

Flute – material used on the strings at B (section 1).

Harp – arpeggiated material and intervals used at C (section 2).

Violin I – material used at A (section 1), with the addition of tremolo.

Violin II – material used at α (section 1).

Viola – ‘pointillistic’ material used by the flute at D (section 2).

Violoncello – material used at C (section 2).

Subsection L

Flute – *tacet*.

Harp – new gesture: *glissandi*, (utilising the expressive capacity of the instrument whilst at the same time acknowledging the cultural associations of this gesture).

Violin I – material used on the strings at B (section 1).

Violin II – material used on the strings at α (section 1).

Viola – material used at A (section 1), with the addition of tremolo.

Violoncello – ‘pointillistic’ material used by the flute at D (section 2).

Subsection M

Flute and Harp – *tacet*.

String quartet – homogeneous texture, with only one new gesture.

Subsection N

Flute, harp and violoncello – *tacet*.

String trio – again homogeneous, with only one new gesture.

Subsection O

Flute – *tacet*.

Harp and string quartet – a dual texture of melody (violoncello) and accompaniment (harp, violins I, II and viola).

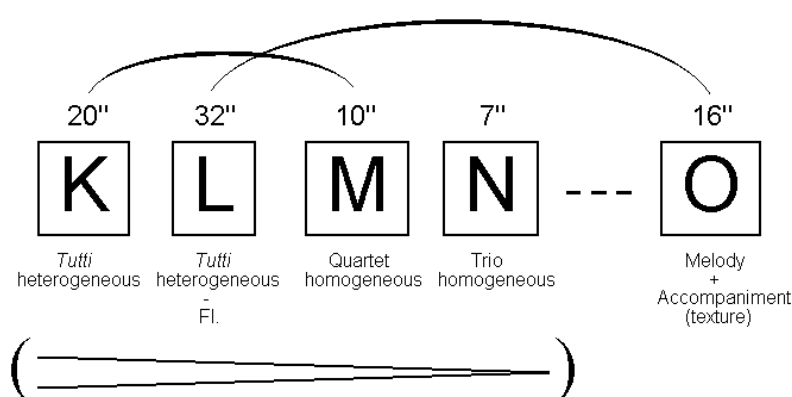


Figure III.3

Figure III.3 shows that there is a diminution/decrease in the number of the instruments used in each subsection, resulting also in a *diminuendo* in terms of dynamic and of contrast in the gestures used. The exception is seen in subsection O which does not correspond to this succession, constituting a *quasi*-independent musical object, disconnected from the others. This last conclusive ‘loose message’ is differentiated from the rest not only by its musical character but also by the textural use of the ensemble. Again I wish to draw your attention to the individual subsections’ duration (in seconds): M is half of K whilst O is half of L. The exception here is subsection N: a smaller duration which does not correspond to the prevailing mathematical scheme.

Figure III.4 presents the formal scheme of the whole work at the macro-level, incorporating the micro-level formal schematics of the preceding three sections into the whole. It is interesting to observe the symmetry in this example: the piece starts with a musical gesture (α) which represents an exception to the micro-structure planning of section 1 and ends with a dual texture of melody and accompaniment (O) that, as

previously stated, also represents the exception of the micro-structure planning of section 3. Note that the formal exceptions appear in sections 1 (1 + 4 subsections) and 3 (4 + 1 subsections), the balance being in the central section. It is also possible to observe the total duration (in seconds) of the three sections: 64 – 210 – 85 respectively. Perhaps unsurprisingly, it is the middle section which, by virtue of its greater length, assumes the core of the work's weight and importance.

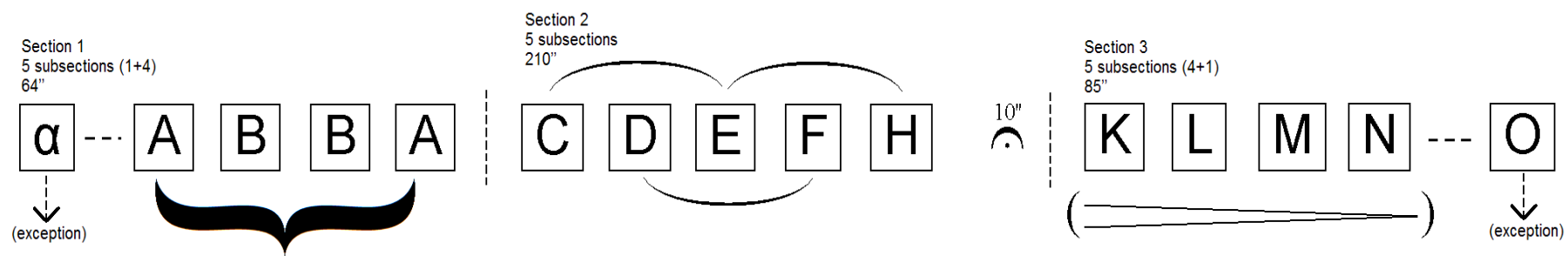


Figure III.4

Intending to complement the previous analysis (which concentrated on harmony and gesture) the present commentary on *Loose messages* aspires to demonstrate the application of principles of proportion and symmetry found in formal planning at both the micro and macro levels in relation to the density of musical gestures, choice of instrumentation used for each subsection, and in the importance given over to total and constituent duration(s).

I believe that the musical discourse of this piece justifies its title. The subsections are disconnected from one another and link like 'flashes': either they are separated by pauses, or *segue* into one another creating a sense of transformation from one gesture to another. The use of a symmetrical stage layout (see score) and the concern to allow for the timbral individuality of each instrument to stand out/emerge from the ensemble, encouraged within me the freedom to assign independent gestures, their own intervallic and harmonic characteristics and, once established, to superimpose these with others from within the ensemble. The creation of a multi-layered texture not only lends the work a multi-dimensional character but also achieves the density of counterpoint between the instruments I desire.

IV. *As duas mulheres de Sigmund Freud*⁶⁷ **[short opera]** **(2008)**

As duas mulheres de Sigmund Freud is a short opera in Portuguese (ca. 13 minutes) for two female characters and chamber orchestra, written in collaboration with the librettist Armando Nascimento Rosa.

This piece was composed for the *Opera in Creation 2008* competition, held at the São Luiz Theatre in Lisbon, Portugal. Five of the short operas entering the competition were then selected for a stage performance where the jury would decide the winning work. *As duas mulheres de Sigmund Freud* won first prize which consisted of a commission for a full-length opera: *Os mortos viajam de metro*⁶⁸. Having selected the composers, the organisers of *Opera in Creation 2008* then assigned each one his/her own librettist to create a short scene (*As duas mulheres de Sigmund Freud*). Although the librettist already conceived the majority of his ideas concerning the plot, we both explored certain thematic ideas I had in mind: a macabre theme and only two female voices, sopranos. Armando Nascimento Rosa (who is an established playwright) likes to 'resurrect' deceased non-fictional characters on stage. This idea was very appropriate to the musical universe I intended to create.

The two female characters are Martha Freud and Minna Bernays: Sigmund Freud's wife and her sister. One hundred years after their deaths the ghosts of the two sisters meet in a cemetery. Martha had read a newspaper headline which referred to a love affair between Freud and her sister, Minna. The two sisters begin a psychoanalytical dialogue and end up snorting Freud's ashes as two drug addicts, referring to the fascination Freud had with cocaine when he was alive.

The music explores a sound world which was appropriate for a dramatic setting in a cemetery. The music played by the orchestra works as a 'third' extra character, almost independent of the voices, providing a *quasi*-static landscape. The form of the piece is clear:

⁶⁷ 'The two women of Sigmund Freud'. See the score in Appendix for an English translation of the libretto.

⁶⁸ See 'Commentaries – *Os mortos viajam de metro*' in the next chapter of this thesis.

- 1) Introduction – A
- 2) Dialogue (first part) – B
- 3) Dialogue (second part) – B'
- 4) Dialogue (third part, recitative) – C
- 5) Conclusion – A'

The form is organised in a *quasi*-symmetrical way. The Conclusion recovers musical material presented in the Introduction, symbolising the inconclusive *post-mortem*, with no development. The Dialogues destabilise the idea of formal symmetry as there is a sense of progression in the musical material used in the central sections.

The Introduction is divided into four distinctive and contrasting parts, starting with a solo tam-tam tremolo (first part, one single gesture) which prepares the way for a musical 'explosion' given to the orchestra (second part) one bar before A. Figure IV.1 shows the eleven-note symmetrical chord played by the woodwind (broken chord) and brass (repeated notes). The Bartók *pizzicato* on the strings functions purely as an effect/gesture and does not relate to the harmony; the gesture is given more resonance and hence timbral consideration (and in so doing enhances the already striking nature of the *pizzicato*) by using open strings, the inclusion of which, though contrary to my overall harmonic planning does evidence my concern for exploiting fully each instrument's own individual capacities and characteristics. This furious gesture is interrupted by the suspended cymbal, whose clear and incisive strike starts the third part of the Introduction.



Figure IV.1

With the objective of creating a 'ghostlike' musical atmosphere, the harmony is somewhat static in the third part of the Introduction. Apart from the 'sound effects' played on the bowed suspended cymbals and another on the horn (depressing the three valves

halfway creating a sound usually known as ‘the wolf’s howl’⁶⁹), the trumpet announces a musical gesture taken from the first movement of Mahler’s *Fifth Symphony* - *Trauermarsch* (‘Funeral March’) thus underlining the sense of context/space as well as actively seeking to allude to a specific time: early twentieth-century Vienna, where Mahler and Freud met for the first time. Departing from the interval played by the trumpet (interval 3), the notes used by the remaining wind instruments complete the total of 11 different pitches that are used in fixed register. These eleven notes are not disposed symmetrically and work as a static ‘harmonic field’ where the notes are played with some considerable time elapsing between them. The strings (except the double bass) nearly always progress symmetrically as a different layer of musical material. The use of the natural resources of an instrument to create an independent musical layer is a recurrent theme in my music. In the specific case of this section, the natural harmonics on the double bass are used together with the artificial harmonics played by the remaining strings, destabilising the harmonic symmetry created by the quartet. The use of symmetrical chords with natural harmonic series usually enriches the way of following a harmonic progression, making it more complex in its perception. Working with two or more different approaches to harmonic thinking simultaneously will obviously allow for greater contrast when one ‘switches’ to a section with only one harmonic approach; this was an idea which aided me greatly in the long-term harmonic planning of this piece. The harmonic reduction of the third section of the Introduction can be seen in Figure IV.2.

The figure consists of three musical staves. The top staff, labeled 'Eleven-note harmonic field', shows a single chord with 11 notes. The middle staff, labeled 'VI. I, VI. II, Vla, Vc.', shows a sequence of chords with fingerings (1-4) and some 'X' marks above them. The bottom staff, labeled 'Double bass', shows a sequence of notes corresponding to the harmonic series of the chords above.

Figure IV.2

The third part of the introduction is also interrupted by a strong and violent gesture, this time an orchestral *tutti* (fourth part). The chord used here is a symmetrical twelve-note chord (Figure IV.3) and all the notes of this chord progress to F₃, attaining a unison that will prepare the onset of section B (first part of the dialogue). The intervals used by the

⁶⁹ For an example of this effect see Olivier Messaien’s *Appel Interstellaire* from *Des canyons aux étoiles...* (1971).

instrumental ensemble to reach F_3 are mainly intervals 1, 3, 4, 6 and 11. Intervals 2, 7 and 10 are also used but much more sparingly. The F_3 is present in all 'harmonic fields' used so far and will have major importance in the following sections as well, thus constituting a kind of 'tonic' (i.e. polarising note) used throughout the piece.

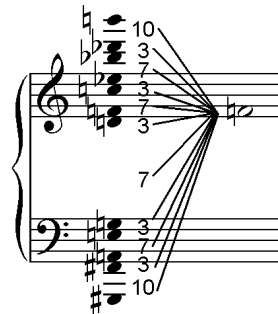


Figure IV.3

In section B and B' the principles of symmetrical harmony are used to generate the chord progression in order to create a 'landscape' (or kaleidoscope effect) in the orchestra. Figure IV.4a shows the harmonic progression of section B (at \boxed{E}) and the roots of its construction (the prominent use of interval 7). The melodic lines of the sopranos are placed on top of this harmonic progression. These lines are constructed with intervals already contained in the harmony played by the orchestra. The 'alien' melodic notes to the harmony are ornamental notes which create contrast (dissonance) within the harmonic field that is being played. However, these 'strange' notes usually keep the same intervals already contained in the harmony. It is also possible to extract some symmetrical harmonic principles out of the melodic lines as shown in the Figure IV.4b. Other instruments sustain some of the notes being sung by the soloists creating a sense of heterophony or echo.

a)

b)

F *mf quasi parlato (ad lib.)* *mp convicta*

Na mi-nha ca-sa, de - bai-xo do meu tec- to, fui en-ga - na da pe-la mi-nha pró-pria ir mã! —

Figure IV.4

Section B', starting at **M**, is based on the harmonic progression shown in Figure IV.5. There is a common note (F₃) which is used to link the chord progression of the section. The four symmetrical chords are used one at a time, but they have the potential to be added together as one larger aggregate: a completely new symmetrical chord. The process by which one achieves this is rather simple: the four chords (all of which contain only four pitches, are all constructed from a common pitch and all use the same intervals) are added up. This equals another symmetrical chord with 9 notes with a new interval (7), resulting from simple mathematic principles of subtraction ($11 - 4 = 7$). Although there is no use of tonal functions, the fact that all the harmonic and melodic material of this piece is related to F₃ gives this note a strong attraction and a 'point of repose'.

Figure IV.5

At **R**, there is a repetition of the same idea explored in the second part of the Introduction, this time without the repetition marks. This ten-second bar works as a bridge

for the penultimate section. The last section (C - Dialogue III) has a *quasi*-recitative flavour with chords played on the vibraphone followed by melodies sung by the sopranos. This section is first characterised by its extreme static quality. After the chord played on the vibraphone, the sopranos respond with simple melodies, the notes of which are extracted from the previous harmony. Figure IV.6a shows the harmonic progression of this section with the chords played by the vibraphone. The strings play moving clusters in order to contradict the static quality of the music played by the rest of the ensemble; the strings constitute an independent layer of musical material, similar to what happened in the second part of the Introduction. The vivid gesture played by the woodwind and brass at **S** and **T** can also be analysed symmetrically as shown in Figure IV.6b. This musical gesture can be seen often in my music: ornamenting a chord by surrounding the main pitches with a series of *quasi*-grace-notes, all maintaining independent melodic lines consisting of small intervals.

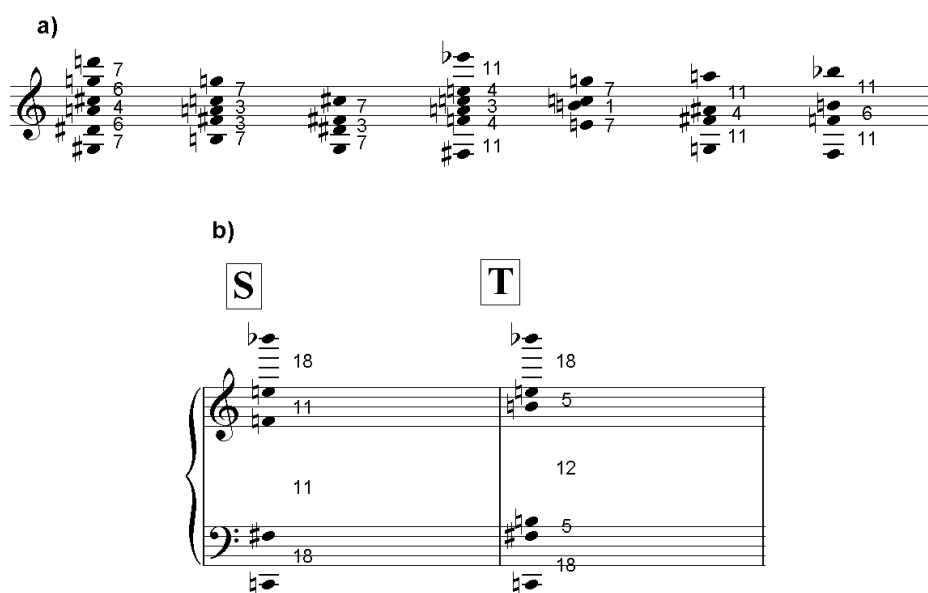


Figure IV.6

The conclusion of this short opera begins at **U**. The same principles of the third part of the Introduction apply (see Figure IV.2 above), with little gestures varied throughout the orchestra. It is worth noting the parallel chord progression on the woodwind one bar after U as shown in Figure IV.7. The use of this gesture underlines the phrase “The rest is neurosis” which is a reference to Shakespeare’s *Hamlet*, where Hamlet says in scene II: “The rest is silence”. The homogeneous symmetrical chord

constructed with interval 7 is moved down the register in parallel motion (using intervals 4 and 1), constituting in itself one 'voice'.

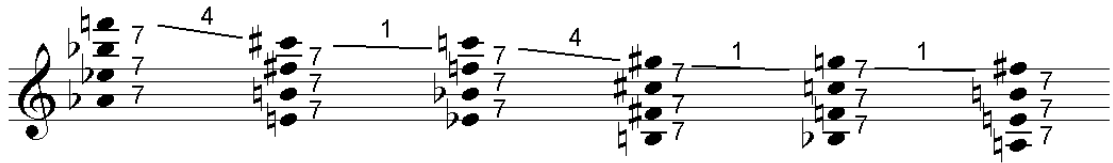


Figure IV.7

As referred to previously, this last section is based upon the same principles used in the third section of the Introduction, underlining the intention of symmetrical formal planning. The piece ends with a lyrical melody played by the violoncello. It is worth noting the lack of clear melodic material within the orchestra, with the exception of the horn solo (three bars after U) and the violoncello solo (starting four bars before the end of the piece). These melodies are clearly influenced by the same intervals used in the soprano lines. Both melodies were intentionally left to the concluding part of the piece in order to give the idea of reminiscent melodic phrases arising from the sopranos' silence, an echo if you like.

The use of symmetrical elements in this piece is simpler than in the others analysed thus far. The harmony of this short opera can be reduced to a small number of chords which characterise the different sections. The use of fixed-register-notes (symmetrical and/or non-symmetrical) gives an unavoidable static quality to this piece, one that I deliberately sought to achieve and which I feel complements the dramaturgical aspect of the work. The element of subtle humour inherent in the libretto allied with a music whose character is static and induces the sense of the macabre, allows for the creation of a degree of 'black humour' and consequently, internal contrast within the work as a whole.

In the next chapter importance will be given to the symbolic aspects related to symmetrical resources in connection with dramatic intentions.

V. *Os mortos viajam de metro*⁷⁰
[opera in one act with prelude]
(2010)

*Os mortos viajam de metro is dedicated to my parents, Alda and Carlos;
and to my sister Inês, who wisely balanced the hours of my days,
the rainy and the sunny ones.*

Os mortos viajam de metro is an opera in one act with prelude (in Portuguese), with libretto by Armando Nascimento Rosa. It was commissioned by São Luiz Theatre in Lisbon, after the short-opera *As duas mulheres de Sigmund Freud* being awarded the first prize in the *Opera in Creation 2008* competition⁷¹. It was premiered on the 9th April 2010 at S. Luiz Theatre by Raquel Alão, Madalena Boléo, Margarida Marecos, Susana Teixeira, Sandra Medeiros and Sónia Alcobaça; with the Portuguese Symphony Orchestra conducted by João Paulo Santos; and stage direction by Paulo Matos. The following analysis will comprise a symbolic description of the musical material and its formal position within the whole. In order not to repeat what was said thus far, this chapter is presented in order to exhibit other issues related to operatic musical composition.

Characters

Young Suicidal Woman/Ophelia
Florbela Espanca
Virginia Woolf
Agatha Christie
Sylvia Plath
Sarah Kane

The opera is set in a disused tube station, long abandoned by the living.

Short synopsis

In a long since abandoned tube station, a Young Suicidal Woman wants to bring her life to an end with a revolver. She has lost the memory of who she is or who she was and is only driven by the all-consuming idea of her own suicide. In this underground metro station where trains no longer pass through, there are also other characters, but none of them knows what brings them there, to such an inhospitable spot. They are ghosts of

⁷⁰ 'The dead travel by metro'. See the score in Appendix for an English translation of the libretto.

⁷¹ See 'Commentaries – *As duas mulheres de Sigmund Freud*'.

female writers, whom have committed suicide: Florbela Espanca, Virginia Woolf, Sylvia Plath and Sarah Kane. Among them, is also Agatha Christie trying to solve the mystery. However, none of them knows the identity of the Young Suicidal Woman, which may offer the key to release them from this strange limbo, by which singing is the only means of communication with each other. In order to understand who this lonely young girl is it is necessary to decipher the name of their surroundings – namely the metro station. In this opera for six female singers, the connections between poetic creation and the urge for death are fictionalised in a serious and lyrical parody giving voice to feminine icons of our collective consciousness.

Formal organisation and musical symbolism

The opera is divided into 19 movements as shown below:

PRELUDE

- I. [introduction]**
- II. [scene 1]** – *Young Suicidal Woman*

ACT

- III. [introduction]**
- IV. [scene 2]** – *Florbela Espanca*
- V. [scene 3]** – *Virginia Woolf*
- VI. [scene 4]** – *Agatha Christie*
- VII. [scene 5]** – *Sylvia Plath, Agatha Christie*
- VIII. [interlude]**
- IX. [scene 6]** – *Young Suicidal Woman*
- X. [scene 7]** – *Sarah Kane, Young Suicidal Woman*
- XI. [scene 8]** – *Virginia Woolf, Sarah Kane, Florbela Espanca*
- XII. [scene 9]** – *Sylvia Plath, Florbela Espanca, Sarah Kane*
- XIII. [scene 10]** – *Agatha Christie, Florbela Espanca, Sylvia Plath, Sarah Kane, Virginia Woolf*
- XIV. [scene 11]** – *Agatha Christie, Virginia Woolf*
- XV. [interlude]**
- XVI. [scene 12]** – *Young Suicidal Woman, Virginia Woolf, Agatha Christie*
- XVII. [scene 13]** – *Virginia Woolf, Agatha Christie, Young Suicidal Woman (Ophelia), Sylvia Plath, Sarah Kane, Florbela Espanca*
- XVIII. [scene 14]** – *Virginia Woolf, Sylvia Plath, Sarah Kane, Florbela Espanca, Agatha Christie*
- XIX. [conclusion]**

The music is continuous, save for a pause between the Prelude and Act. All the movements described as 'scenes' involve the characters, the remaining five are purely instrumental.

The macro-form of this opera could be understood as follows:

A – Prelude: [introduction] and [scene 1]

The opera starts with an orchestral introduction which sets the general mood of the drama. The Introduction of the Prelude and the two Interludes function as instrumental preparations for the entrances of the Young Suicidal Woman (referred to as YSW for the remainder of the chapter). The Introduction to the Act is an exact repetition of the Introduction to the Prelude, playing upon the audience's perception and memory: the Prelude's Introduction introduces the first character who commits suicide with a revolver. By using exactly the same introduction for the beginning of the Act my express intention was to create the same emotional 'background' to serve as a link (to show a clear psychological bond) with the new character who enters in scene 2.

The musical material used in the Introductions [from the beginning of the Prelude to rehearsal mark 2 (Introduction 1) and from the beginning of the Act to rehearsal mark 24 (Introduction 2)] can be considered to be a *leitmotif* serving to represent the metro station. It also appears in a shortened version in the two Interludes [from rehearsal mark 40 to 42 (Interlude I) and from rehearsal mark 72 to 74 (Interlude II)]. The constituent material is exactly the same and consists of five juxtaposed gestures: -

1. Repeated note (F₃) and symmetrical chords played on second horn, trombone, violoncellos and double bass.
2. Violas' melody (interval 1); 'against' the harmonic field, i.e. without any intervallic relationship with the rest of the musical material (introducing a small theme developed at the end of scene 7).
3. Quarter-tone *glissandi* (emerging from a symmetrical chord) on first horn, both trumpets and both bassoons.

4. A rapid and nervous gesture on the flutes, oboes and clarinets, consisting of ornamenting a symmetrical chord with small melodic intervals⁷².
5. Melody on strings (violins and violas); parallel movement of a symmetrical chord.

Figure V.1 shows a harmonic reduction relating to the five afore-mentioned gestures. I deliberately maintained the same orchestration for the above gestures each time they appear in the score so as to strengthen their characterisation. The other small gestures (piano muted string, horn valves effect, un-pitched percussion, *etc.*) contribute to the sonority of the overall atmosphere. The five gestures listed above work in a very systematic way, while the others are used mainly colouristically and on occasion as a disruptive ‘effect’.

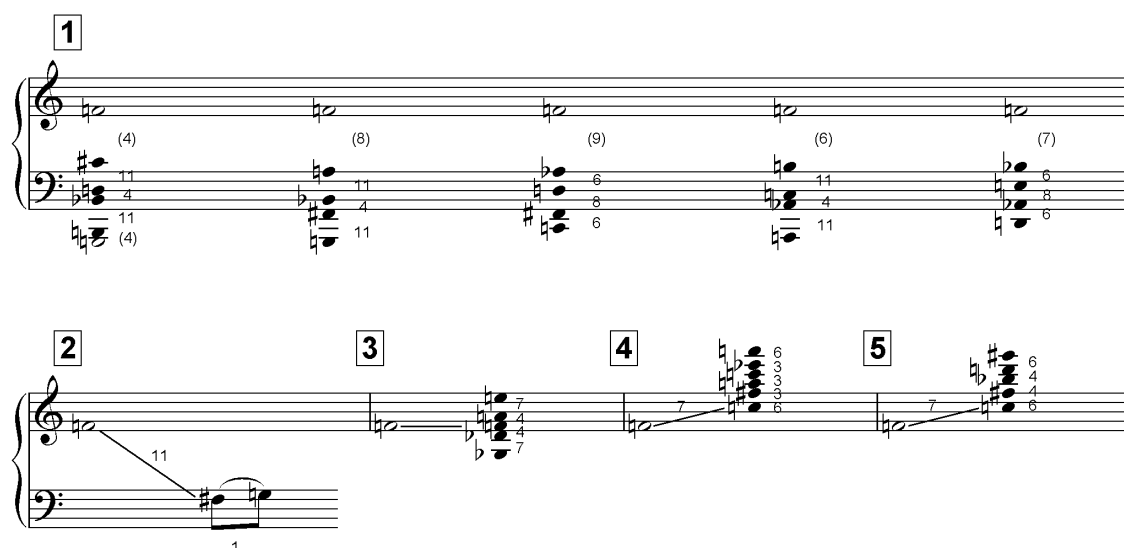


Figure V.1

After the presentation of these musical gestures, the orchestra culminates in a climax from where a new subsection emerges. This subsection is entirely based on the beginning of *As duas mulheres de Sigmund Freud*⁷³ but with an enlarged orchestration.

Scene 1: This is characterised by the four attempts from the YSW to end her life with a revolver. The text presented in this scene represents the character’s last words: the

⁷² As stated in the previous chapter (see Figure IV.6b), this gesture is recurrently used in my music.

⁷³ See ‘Commentaries – *As duas mulheres de Sigmund Freud*’.

last will and testament. The four attempts are musically presented in four different subsections of the scene which will influence the musical material of the whole opera. Thus, the material of the first attempt inspires scene 2; the material of the second attempt inspires scenes 3 and 5; and the material of the fourth attempt inspires scene 4. At the end of the fourth suicide attempt the same melodic material (as sung by the YSW at the beginning of this scene) is 're-played', thus creating a sense of formal symmetry. The fact that the Prelude ends with an orchestral explosion (without voices) also gives symmetrical formal coherence to the first part of the opera.

B – Act: [introduction] to [scene 5]

As indicated above the Act starts with the same introduction which prepares the entrance of Florbela Espanca (scene 2). By seemingly recapitulating at this point I devised a way in which to directly influence the audience's perception of the narrative, namely that this new character was also going to attempt to commit suicide. In this section of the opera four of the characters introduce themselves through either solos or duos: Virginia Woolf (scene 3), Agatha Christie (scene 4) and Sylvia Plath (scene 5).

Florbela Espanca's material at the beginning of scene 2 uses exactly the same melodic intervals as those at the beginning of scene 1, intimating the sense of recapitulation, as mentioned before. The musical gestures of this scene are mainly based on the YSW's first attempt to commit suicide (scene 1) with variations of the musical material and occasional insertion of new gestures. At the end of this scene the gesture played by the strings (Figure V.2a) introduces the entrance of a new character: Virginia Woolf. From this point onwards, this gesture will be recurrently used throughout the opera, particularly by way of introducing the character of Virginia Woolf to the action. Figure V.2b shows the intervallic analysis of the chords used to generate the musical material played by the strings. The second chord of the example shows a certain imbalance in terms of symmetry although does retain the regularity of proportions used hitherto.



Figure V.2

Scene 3: This is a dialogue between Virginia Woolf and Florbela Espanca which serves to introduce the two women to each other and the audience. The general musical gesture is based on the YSW's second suicide attempt from scene 1, describing the conversation the characters are having, serving as harmonic support (or foundation) from whence the melodic lines emerge. At the end of this scene the gesture played by the solo violoncello (constructed from successive symmetrical chords using intervals 7 and 1, see Figure V.3) introduces the entrance of a new character: Agatha Christie. Like the gesture in the previous example, this one too is recurrently used throughout the opera.

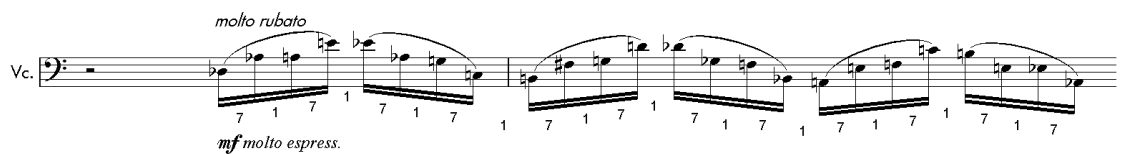


Figure V.3

Scene 4: This is a recitative where Agatha Christie reveals the reasons for her being here: there is a woman constantly attempting to commit suicide whose identity is a mystery needing to be solved. The music, based on the YSW's fourth suicide attempt, is simple and sparse, symbolising the simplicity of this character.

Scene 5: Like scene 3, there is a dialogue which introduces a new character: Sylvia Plath. The orchestral music serves again as a 'harmonic foundation' to the vocal melodies, underlining the use of this specific atmosphere whenever a scene is characterised by dialogues introducing new characters. Occasionally the voices are doubled by the orchestra in order to emphasise the most dramatic phrases as well as to give more importance to specific areas of the story whose success is dependent on their clear perception and understanding by the audience. The gesture played by the solo violoncello is taken from *As duas mulheres de Sigmund Freud* and *Loose messages* (although here it is based on different intervals) and prepares the first Interlude (Figure V.4).

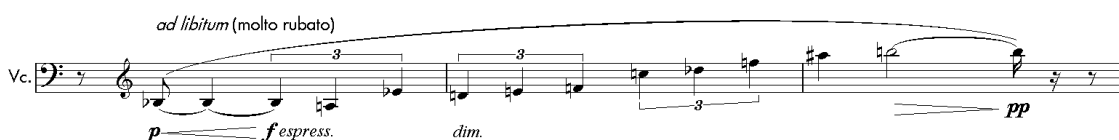


Figure V.4

C - Act: [interlude I] to [scene 11]

The third part of the opera starts with a musical interlude that prepares the second appearance of the YSW who attempts suicide again, this time with a syringe. This part of the opera is the most dynamic; all the characters converge on stage leading to conflicts and/or passionate encounters.

The first Interlude begins with an expressive gesture played by the first violin (solo) and it is harmonised by the remaining strings, before recapitulating the musical material from the beginning of the two Introductions (as shown before). This prepares the arresting climax which will culminate in the second entrance of the YSW, characterised by its ferocity.

There follows six self-contained scenes, increasing in both levels of intensity and numbers of characters involved: -

Scene 6: Here there is a recapitulation of a variation of the material from the first scene. However, this material is juxtaposed in closer proximity than before. From a vocal point of view, the scene is characterised by the use of melismas as well as all round virtuosity.

Scene 7: Sarah Kane enters the drama. She is the sixth character to show up and the first one to interact with the YSW. The fractious mood is maintained from the previous scene symbolising the continual conflict between these two characters. After the orchestral climax (which is an exact repetition of the climax used after the YSW's third suicide attempt in scene 1), Sarah Kane begins a vocal solo based on the Violas' melody (interval 1) presented in the Introductions (see above).

Scene 8: This is the first scene to include more than two characters at the same time. The entrance of Virginia Woolf is associated with the idea of a 'harmonic landscape' used in scenes 3 and 5. The main characteristic of this scene is the contrast between Sarah Kane and Florbela Espanca. The first, a very active character, almost always responds in an offensive way. On the other hand, Florbela Espanca (the only Portuguese character in the opera) is characterised by melancholic lines reminiscent of Fado Music⁷⁴.

Scene 9: This begins with the nervous entrance of Sylvia Plath who believes she is being pursued. Sarah Kane (whose admiration for the work of Sylvia Plath is well documented) recognises the older woman and freely expresses her happiness at their acquaintance. The music becomes more and more expressive and lyrical, culminating in a slow waltz in G minor (Figure V.5) which is played while these two characters dance.



Figure V.5

Scene 10: This interrupts the previous moment with the entrance of Agatha Christie. This is the first time the five characters meet, all endeavouring to find out the identity of the YSW. The text for each character becomes shorter in this scene, whilst the music becomes more and more fragmented using different musical gestures for each line. These are occasionally connected with the gesture played by the solo violoncello shown in Figure V.3 (see above).

⁷⁴ *Fado* (Portuguese for 'destiny', 'fate') is a musical genre which is characterised by mournful tunes and lyrics, often about the sea or the life of the poor.

Scene 11: This is another recitative, this time between Virginia Woolf and Agatha Christie both seeking to identify the name of the abandoned metro station and with it also the name of the YSW. This recitative is less sparse than the one in scene 4: it is not only based on the YSW's fourth suicidal attempt in scene 1, but also on the regular pulsating rhythms characterising the Introductions.

D - Act: [interlude II] to [conclusion]

The fourth and last section of the opera begins (as in the previous section) with an interlude which prepares the YSW's third entry. At this point however, after the climax, there is a coda, during which the YSW uses a knife to try and cut her wrists.

The three scenes: -

Scene 12: This scene has the third and last entry of the YSW. This last appearance is the shortest of all, demonstrating a progressive reduction of the duration of each scene featuring the YSW. After her final vocal entry the music recapitulates the same recitative of scene 11; this time, however, the vocal lines between Virginia Woolf and Agatha Christie are reversed.

Scene 13: This is the moment of the revelation: the name of the unknown metro station is discovered: Elsinore, – prompting the identification of the YSW: Ophelia. The discovery is made by Virginia Woolf (both she in real life and the fictional Ophelia committed suicide by drowning themselves). The final chorus represents a ritual and symbolises a typical musical gesture in opera: the unification of the voices in order to prepare the finale.

Scene 14: This is the moment of Ophelia's liberation and the music's texture is written in a minimalist way; all the voices are unified by sharing common melodic contours whilst the orchestra obsessively maintain an *ostinato*.

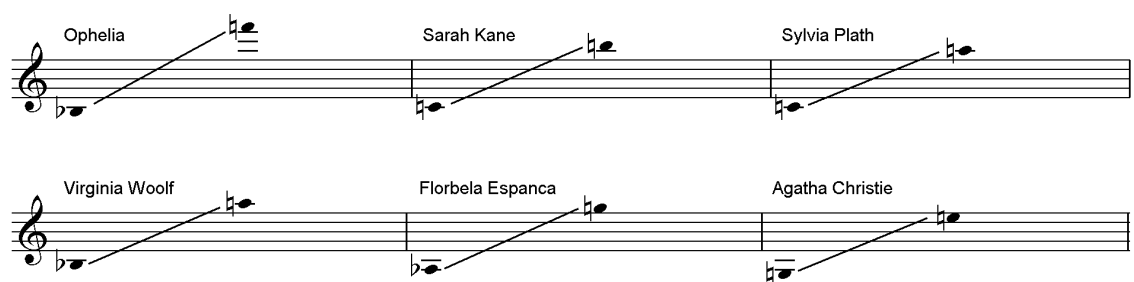
The conclusion is almost a palindrome of the Introduction, evidence that there is clear intention to provide symmetrical coherence to the formal planning of the opera. The conclusion begins with a *staccato* and 'pointilistic' gesture scored for the woodwind which is followed by the regular pulsating rhythms prevalent in both the Introductions and Interludes. It is worth noting that in the Introductions and Interludes the repeated note

(effectively a pedal) used was F₃ and in the Conclusion it is E₃, reiterating what was said previously about my practice in pitch polarisation specifically in order to provide clear aural reference⁷⁵. The afore-mentioned palindrome is presented with some variation symbolising the characters' existence: destined to endless repetition; condemned to suffer eternity in purgatory as penance for their committal of a mortal sin: suicide.

As it can be seen from the previous formal description there was no attempt to define the characters with recognisable thematic material. All the musical material in this opera tries to reflect only one scenario. The recurrent use of the same material which is superimposed, varied, juxtaposed, extended and reduced was applied in order to create a cyclical musical universe. The opera's sound world shares obvious similarities with *As duas mulheres de Sigmund Freud*: this was intentional as the latter work was a preparatory study for *Os mortos viajam de metro*. The theme of self-destruction connected to each of the characters (celebrated in real life for their creativity) prompted the exploration of a dark, dramatic and depressing universe. This theme (which I encouraged the librettist to explore fully) has become more and more important to my musical imagery. It was always my intention in this work to create a musical 'landscape' with the orchestra for the vocal lines to both inhabit and explore.

The characters and their vocal material

All the female characters of *Os mortos viajam de metro* committed suicide, except Agatha Christie. On the one hand, Ophelia is the 'outsider' one that never existed in 'our world'; she is "the ghost of a ghost": a fictional dead character. All the characters are sopranos apart from Florbela Espanca and Agatha Christie who are *mezzi-soprani*. The tessitura of the characters was planned in order to differentiate between an all-female ensemble as shown in Figure V.6.



⁷⁵ See 'Symmetrical Harmony – construction and usage' in Section 1 of this thesis.

Figure V.6

To symbolically unify the characters (and thus highlight the enduring fact that they all share a similar fate – they are all dead) I specifically did not differentiate between the intervallic content of their melodic lines. From a recurrent melody initially sung by Ophelia in scene 1 which is based on intervals 7 and 1, other melodic gestures were derived as seen in Figure V.7.



Figure V.7

The audibility and comprehension of the text was my priority when constructing the vocal lines for the opera. The mostly syllabic and *parlando* word setting together with varied melodic contours, result in sense of a long recitative that travels through all the scenes of the opera. There was the preoccupation of making the text even clearer for Agatha Christie who sings mostly in *sprechgesang*⁷⁶. I chose to use this vocal technique for Agatha Christie as hers is perhaps the most mysterious character in the opera and I wanted this to be highlighted by the uniqueness of her articulation. She represents the

⁷⁶ *Sprechgesang* (German for 'spoken-song' or 'spoken-voice') is a musical term used to refer to a vocal technique between singing and speaking. This technique was pioneered by Arnold Schönberg in works such as *Pierrot Luniare*, Op. 21 (1912).

detective of the group, thus it is necessary that her deductions should be easily heard. On the other hand, the vocal lines of Sarah Kane are the most 'pointilistic' and fragmented for the simple reason that she is the most contemporary character of them all.

The orchestration

I considered the orchestra to be my seventh character in the opera: it is the instrumental music which establishes an initial atmosphere of the abandoned metro station; this material takes on the mantle of *leitmotif*. The orchestral texture is reduced during the voices' interventions in order to allow for a clear understanding of both the text and the melodies. I feel this is justified because the vocal style is mainly *quasi*-recitative and therefore transparency within the instrumental density is required. Thus, the contrast between sections with voice and those that are purely instrumental (where the orchestra is used to its full potential) is recognisable. The music written for the orchestra is mainly continuous and underlines the importance given to this 'seventh character': either it is very much in the foreground or it provides background 'harmonic landscapes'.

The solos played by the violoncello assume a very important role within the orchestra, imitating, to a degree, the vocal lines. These solos trigger new sections, or characters' entrances, or simply link different gestures. The instrumental sections consistently give the idea that the opera is always starting from the beginning again. However, these 'false-beginnings' are always perceived in a different way due to our cumulative memory, i.e. the audience will always expect the presence of Ophelia on the stage whenever the orchestra plays the same recurrent musical material. As the audience begins to recognise these gestures over the course of the whole work the 'general atmosphere' (the musical language of the 'landscape') will become more familiar.

**VI. *Nocturne: rituel*
&
Diurne: alter ego
for 15 players⁷⁷
(2010)**

In addition to what has previously been said and in order to conclude this thesis, it is appropriate to reflect upon other tools and motivations also connected to musical creation, for example the idea of musical discourse and its 'psychological consequences' with the audience. Though the reception of such extra-musical associations is dependent wholly on the subjectivity of the listener, I regard such ideas an important component of composition and so wish to analyse briefly what I see as the causes and effects concerning these issues; even though both pieces analysed here share the same compositional technical concerns analysed in the previous chapters.

Nocturne: rituel was written for the Nouvel Ensemble Moderne and the conductor Lorraine Vaillancourt, after being selected to participate in the 10th *International Forum for Young Composers Music & Art Video*⁷⁸. The piece received its world première on 26th November 2010 in Montreal (Canada). *Diurne: alter ego* was written for the *International Composer Pyramid*⁷⁹ project and was premiered on 4th December 2010 in Canterbury (England) by the ICP Ensemble, conducted by Gerry Cornelius. Though both pieces arose from very different commissions, they were composed simultaneously and share several compositional concerns intrinsically linking them, as so justifying being analysed concurrently.

The titles *Nocturne* and *Diurne* represent one of the oldest dichotomies in human history: night and day; darkness and light. If on one hand *Nocturne* is ritualistic and inhabits the sombre world of a funeral march⁸⁰, then *Diurne* is characterised as being its

⁷⁷ Despite the two pieces using the same number of instruments, the specific instrumentation is slightly different. *Nocturne*: 1.1.2.1. – 1.1.1.0. – 1Perc. – Pno./Cel. – 1.1.1.1.1. *Diurne*: 1.1.1.1. – 2.1.1.0. – 1Perc. – Pno. – 1.1.1.1.1.

⁷⁸ This piece was written to the video *Agora Obscura* by David Manseau. Despite the form of the video inspiring the composition of the piece, *Nocturne: rituel* was purposely written to work as a stand-alone musical work. The following analysis will focus only on the work as a self-contained musical statement.

⁷⁹ This is a three-year project organised by *Sounds New* and *Coups de Vents*, which started with a Call for Scores in January 2010. Twelve composers were selected and given tuition and mentoring, including weekend workshops in both France and the UK. *Diurne: alter ego* was the winning work of the 2010 edition of the project.

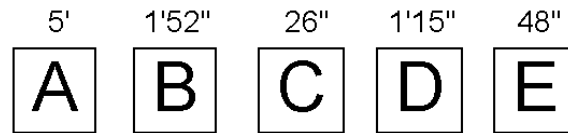
⁸⁰ The death of the Portuguese Nobel laureate for fiction, José Saramago in June 2010 had a profound impact on me. This piece represents a homage to his works which I hold very dear.

alter ego, formed of more energetic and diverse material. These two pieces ‘recycle’ material from *Os mortos viajam de metro*⁸¹ and, taken together both works form a suite or diptych: *Nocturne* reuses the most lyrical and expressive elements from the opera, *Diurne* the most ferocious and rhythmic material; it was a conscious decision on my part that each piece draw on existing material, in this case from *Os mortos viajam de metro* and in doing so, appreciate the capacity the existent material had (and perhaps still has) to be so substantially revised as to function in a completely new, equally viable context; the common element to all the musical material used in these two pieces is their intervallic structure, proportion and symmetry.

The macro-structure in *Nocturne: rituel* consists of five sections. The duration of section A is 5 minutes and the following four sections (B, C, D and E) have the total duration of 4’21”. All the constituent sections are characterised by a single musical atmosphere that is maintained for the pre-determined period of time. Section A makes use of musical gestures which are mainly inspired by the two Introductions to *Os mortos viajam de metro*: 1) an insistent regular pulse where 2) sparse gestures are superimposed. Section B is based on the movement of the strings using *glissandi* where fast gestures (on celesta and glockenspiel) are superimposed, together with muted trumpet (Harmon mute) plus bowed suspended cymbal. Section C is a small variation of the previous section: the winds recapitulate the gestures previously played by the celesta and glockenspiel. Section D is characterised by a static harmonic field whose notes always appear in their fixed register: the strings repeat a musical gesture which appears rhythmically independent from the rest of the ensemble; the winds sustain the notes of the chord, ornamenting them with $\frac{1}{4}$ tone *glissandi* and the piano and percussion play the same notes melodically. The piece ends with a sudden emergence of a melody on the strings, based around G minor, lasting 6 bars, which is repeated four times (the first bar is repeated five times). The other instruments try to ‘un-focus’ the lyricism of this melody, ornamenting it with $\frac{1}{4}$ tones, notes that do not belong to the general harmony and effects such as multiphonics or the horn’s ‘wolf’s howl’⁸². Figure VI.1 shows a graphic representing the macro-structure of this piece.

⁸¹ See ‘Commentaries – *Os mortos viajam de metro*’.

⁸² See ‘Commentaries – *As duas mulheres de Sigmund Freud*’.

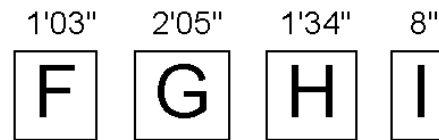


Total duration: ca. 9'21"

Figure VI.1

Nocturne: rituel is principally characterised by its long and atmospheric section (A), which is both hypnotic and meditative. The intention was to establish an aural focus, achieved by maintaining the same gestures for a long period of time. Once a specific musical gesture is established, clearly (here through repetition over a longer time span) our aural memory will recognise more readily the change to a different section. This impact is due to the idea of playing with the listener's sense of anticipation; by delaying the eventual transition between two contrasting segments of material, the composer is heightening the individual listener's aural perception: when the music does move/change it is consequently felt/experienced more keenly. By consciously playing this musical 'game', aural recognition and identification of the material's appearance is enhanced: once the musical material is not developed, our consciousness has time to understand the differences between sections. *Nocturne:rituel* 'develops' according to consonant gestures (innately established as recognisable to our ear). The work ends with a *quasi*-tonal melody, underlining my recent tendency to imbue the final bars of my scores with some object/gesture redolent of a musical 'departure'.

Diurne: alter ego is divided into 4 sections: Section F is characterised by the fast juxtaposition of three energetic gestures, the principal one being the dual between the piano and marimba. Section G is superficially based on Section A of *Nocturne: rituel*, where the gestures are transfigured and played in a more chaotic order. Section H is based on the juxtaposition of two gestures: the first is characterised by its rhythm, the second by its inherent drama where the whole ensemble play dense chords. These chords are mainly taken from the end of scene 1 in *Os mortos viajam de metro*. At Section I, I insert a musical gesture which clearly has its roots in jazz music; the instrumentation also owes something to a traditional jazz trio: suspended cymbal, piano and double bass. This section is only 8 seconds long. Figure VI.2 shows the macro-structure of the work as a graphic.



Total duration: ca. 4'50"

Figure VI.2

As a contrasting response to *Nocturne*, *Diurne* is characterised by the fast and chaotic juxtaposition of various musical gestures; the speed at which these gestures are presented means that memorising (and subsequently recognising) one type of material as distinct from another is trying for the audience. The piece ends in a new musical ‘world’ from that presented from the start and throughout (and even more different if compared to *Nocturne*). By including a musical gesture commonly found in Jazz at the end of the piece, abruptly transports the audience to a completely different world. The effect of the final gesture leads us to forget everything that was played before, thus ‘disorienting’ our consciousness. This is a resource very much used in the temporal visual arts and entertainment (in both cinema and animation), and used as a humoristic ‘trick’⁸³. The fact that the piece ends just after the appearance of this gesture underlines its structural importance: it is our lasting impression of the work. The work’s short duration also strengthens the effect of free-association of musical styles, specifically in a poly-stylistic language or as simple quotation. Here I intend it to serve as a disruptive schism within the narrative⁸⁴.

The expression ‘musical journey’ is perhaps what best defines one of the concepts behind these two pieces: the audience is transported by means of both diverse gestures and musical references. In *Nocturne* the ‘journey’ is slow, conversely, in *Diurne* it is both fast and fragmented.

The way in which my music communicates with the audience and how best I can utilise the mutually inclusive elements of surprise and contrast are key factors concerning

⁸³ For example, the animated sitcom created by Seth MacFarlane *Family Guy*, where the cutaway gags are not exclusively used to be funny, but also to transport the spectator to a different universe, creating contrast with the current narrative. This narrative style can also be seen in films such as *Being John Malkovich*, *Adaptation*, *Eternal Sunshine of the Spotless Mind* and *Synecdoche, New York* all of them written by Charlie Kaufman.

⁸⁴ The idea of insanity: to put a character (for example, Shakespeare’s Hamlet) in a different play (for example, in Beckett’s *Waiting for Godot*).

me at each piece's genesis; the starting point is never a technical principle or stylistic conceit. The musical gesture and its position within the form of the piece, the weight it has at the moment of its appearance, which way it is going to be prepared (if at all), the way it is going to be resolved (or not), the duration it requires to establish itself, how a specific gesture will psychologically effect the listener's perception of the piece, *etc.* – all these factors together pose the musical questions that I believe it is my job as a composer to find solutions for: they are my motivation. I am aware that these issues will not be perceived uniformly by everyone, nor elicit a response the weight of which I try to bring to each and every composition I set out to write; it is perhaps a creative idiosyncrasy influencing both the way I think about music and how I approach the act of composition itself and, as such forms the indelible mark on each and every work I write, the like of which constitutes both my compositional language and, though essentially elusive no less real, my 'voice'.